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Machine Tool Situation Analyzed

Little Reduction in Prices—Less Free Service to Buyer—Additional Manufacturing Lines for Tool Builder — Why Buyer Needs to Wake Up

BY JOHN J. RALPH

IN analyzing present conditions it is necessary to go over those of the past ten years. In 1911 trouble began. In 1912 a visitor to manufacturing plants found one after another with but one machine tool in four working, except, of course, in automobile plants. Naturally, there was no particular amount of business for those who made machine tools.

The industry was then in the position of having had to redesign the entire line to meet the increased capabilities of modern tool steel. Companies that had designs which were up to date, exceedingly powerful and adapted to quick production, were in better shape than the others. Those that catered to the automobile industry were in somewhat better shape than the rest.

In 1914 there were signs of a revival, which was cut absolutely dead by the declaration of war in August.

The situation was broadly as follows:

The machine building capacity was at least twice as large as the average demand of the country

Demand abroad had absolutely disappeared and foreign lines had begun to invade the market here

Competition for business offered was unlimited and ruthless

Amount of business to be had was very small

Industry was very close to bankruptcy and was grimly holding on waiting for a change in the tide

Stocks on hand of machine tools were large, the manufacturers having built to keep factories and organization going as long as possible

In August, 1914, the great war was started and the long-looked-for "better times" then developing were squelched flat. Money tightened up amazingly. Within six weeks the first of the European buyers of machine tools had arrived and the long-looked-for period of prosperity had come. By the first part of 1915 practically all of the reserve stock of machine tools had been exhausted and long-time deliveries commenced.

With the demand for other goods for the Allies, the placing of war contracts for munitions, the revival of the automobile industry, and the general intensification of business throughout the country, there was created an enormous domestic as well as foreign demand for machine tools, and factories worked up to capacity continuously for the first time in their existence.

The machining of shells and guns called for simple, strong, one-operation machines. These were designed and supplied, many by outsiders who had not previously been in the machine tool line.

Prices for tools went to fantastic levels. Second-hand, ten and twenty-year-old machines went for as much as new machines, infinitely more powerful, of the same make. There was a buyer's panic. Some of this old machinery, probably most of it, went to Europe. Some stayed here.

Existing machine tool builders first got the most out of their present shops and then built additions. Shortly the building capacity of the country had been doubled. By this time the newcomers were entering the field, and it is probable that at the time of the signing of the armistice, the building capacity of the country had been quadrupled as compared with August, 1914. Some estimate the expansion as much greater.

In November, 1918, during the armistice negotiations, United States Government orders were issued holding up all work on Government contracts for machine tools. This lead was followed by private buyers for war material contracts. There was an immediate paralysis of operation. Some insisted

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on the Government's taking over all tools finished or almost finished, while others took them back at a figure considerably under the sales price.

In common with the rest, the machinery tool industry put a damper on Government selling of machine stocks, fearing the demoralizing effect of throwing them on the market.

The buying capacity of the country, released from the necessity of conservation "To win the war," immediately called for material, quickly and in large quantities. Enormous exports to Europe added to the demand here.

During the "take-up" period of about six months there was a very noticeable lull in the machine tool market and there was a cut in price by many manufacturers of about 20 to 25 per cent about March, 1919. There was no increase in demand in response to this cut. However, the industries which were transferring to a peace-time basis now got into running shape, the expected slump did not arrive, Government tools did not reach the market, and prices started to rise again. Machine tool manufacturers realized that cast iron and steel cost as much if not more than before, labor cost more and was less efficient and that as an operating principle "Get it while the getting is good" was not to be excelled.

Returning sanity, a general unwillingness to buy unsatisfactory goods at insane prices, brought the miscalled "buyer's strike." The first to suffer in a declining consumption movement and the last to feel the effect of the upward trend, the machine tool manufacturer sees again a dead market. To him comes the question—is this at last the "Big Slump"? In 1917, as we entered the war there was a slump, due to readjustment, the Allies stopping their buying and the activities necessary to starting our own war supply industry not yet under way.

After the armistice and until the middle of 1919 there was another lessening of demand, hailed by the alarmist as the expected event.

To-day there is a feeling that certain large demands have been postponed, such as that typified by the railroads, or an expected revival and growth of the automobile industry. It is also felt that the market has absorbed the stocks of Government tools and that the feared demoralization was an imaginary terror.

Charting Conditions

In the accompanying charts an attempt has been made to picture roughly the occurrences of the past seven years. From the standpoint of the future there are three significant areas—A, A_1, B, B_1, C, C_1.

The peak forming A, A_1 being due to the pressure of foreign demand, it is easy to assume that this material having been shipped overseas is out of the market and unavailable. This is partly true, but it has not been fully realized to what extent existent factories on this side discarded old equipment and, selling to exporters for as much or more than they had paid for it years before, replaced it with modern equipment to bring their shops up to date. In 1914 the well-substantiated feeling existed that there was a dammed-up demand, the accumulation of some years, which would be released at the first intimation of coming good times. It may be assumed that this was largely satisfied before the end of 1917.

The curve showing the assumed average demand allows for an increase in demand for machine tools amounting to 100 per cent over 1914—a not impossible though probably optimistic estimate. The curve of manufacturing capacity is assumed to have fallen materially from the maximum due to the withdrawal of war machine and emergency manufacturers until to-day the manufacturing capacity of machine tool makers is shown as between two and three times the present assumed average consumption.

Areas B and B_1 consist of machine tools bought mainly for war material manufacture. These consisted of two kinds—standard machines to perform usual operations and special machines, such as those designed and manufactured for shells, guns, recuperator parts, etc. These latter will practically all be scrapped as there is no demand for that type of machine in peace times.

The remainder of these areas and the C areas were mainly high-class machines of great power. Part of B-B_1 is the stock of machines owned by the Government. This consisted of machines in Government arsenals and partly of machines owned by it and installed in private plants. It is difficult to tell what has happened to all of these. The Government advertisements indicate that a large proportion of the surplus has been bought. A tour of the secondhand dealers will show large stocks of machines formerly owned by the Government and only now coming on the market. These machines were to have been sold on a very conservative basis and to have been kept out of the dealers' hands—the machine tool manufacturers handling them thus being protected from unfair competition and the Government getting the maximum return for its tools.

Quite properly the manufacturers individually refused to do this as it meant the re-conditioning of all of the machines and practically entire stoppage of output of the factory on new machines. The exceedingly conservative pricing for resale has also given way, as might have been foreseen—probably was—the arrangement being entered into by manufacturing organizations and Government officials through fear of paralyzing the industry. To-day some of these tools are being sold for a song.

There was another reason for the manufacturer not caring to be responsible for these machines. The average quality of machines made during the years 1916 to 1918 inclusive had declined very sharply and the maker had little doubt of his ability to place his new machines in competition with the "war babies." He also foresaw the desirability and necessity of redesigning radically to bring his machinery up to the standard of present day cutting tools and manufacturing methods,

The disposition of Government and surplus war material machines in private factories is of great interest. So far as the writer has noted, there has been no authoritative statement made as to their disposition. In some cases they were bought by the plant in which they were installed in liquidation of claims against the Government. Examination of lists of tools for sale by some of the industries points to the replacement of out of date and poor design tools with the best of the machines bought for war work and the throwing of the others on the market.

Automobile Industry

In an examination of the prospects of the machine tool industry we must not neglect to note the condition of the foremost single consuming source of tools during much of the past twenty years—the automobile industry.

Year after year this industry has increased its size, in some years almost doubling its output. Their figures as to the amount of automotive equipment the country could absorb have been very optimistic and still are, but this past year has shown that we are nearer the saturation points for normal business conditions than had been realized. With factories running at a small percentage of production

for months, a decreasing price for finished articles, and comparatively small decrease in raw material and labor price and an undiminished overhead, there is little inducement for reckless expansion.

In addition to its expansion the industry had been the foremost in the adoption of high production and labor-saving machinery. In some cases the costs of finishing had been cut to an unbelievably small amount. Cutting these in half would have but little effect on the final cost of the product, for overhead and material are already the largest part of the factory cost, and while the substitution of more productive machines would cut the direct labor charge it would increase the overhead, thus cutting the net return very materially. This lessens the incentive to replace much of the present equipment.

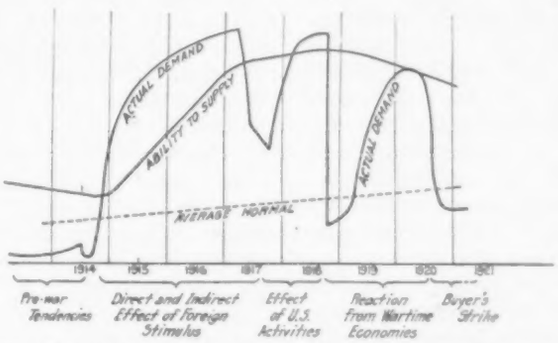
There will be, of course, substitutions for out-of-date and wornout machinery but it is reasonable to believe that the totals absorbed will not reach the former amount in this industry.

Promise of the Varied Industries

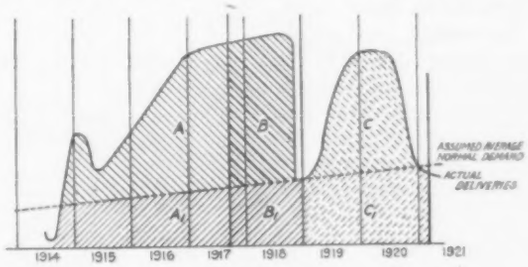
At present there is going on in the varied industries of less size a process of filling in and replacing of obsolete and inappropriate machines with second-hand tools of good type with which the market is so well stocked at present. This is probably part of the areas A_1, B_1, C_1 which was not filled in in the past seven years. It will not be filled in completely for some time unless the hopes of all come true and there is a material change in conditions.

The line of average consumption which is shown as straight is, of course, fictitious, as the usual actual consumption line is full of hills and valleys.

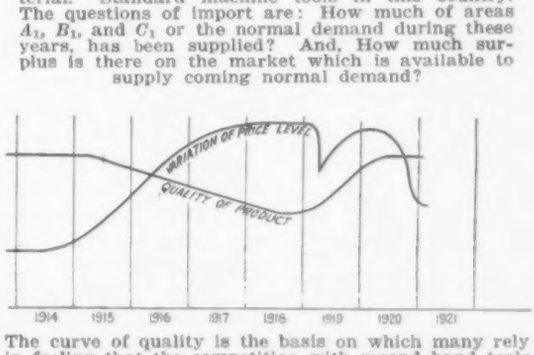
The question of how much of the normal peace demand of the past seven years and the effect of the undoubtedly hard usage tools received during that time has been filled while the demand for war tools was cared for and how much of this surplus war tool stock is available to fill normal demands in the future will determine the relative demand for machine tools as much as well as the industrial condition of the country.



The Curves Are Illustrative of Conditions as Seen by One Observer. There is no pretense that there is accuracy in a quantitative sense. Shown as sharp lines to illustrate the points made, they should actually be broad bands, the situations with respect to differing lines varying greatly, compliance with general state of trade varying greatly.



Areas A_1, B_1, and C_1 Together Represent the Normal Requirements of the Country. The entire area of A, B, and C plus the above represents the total machine tools supplied over the past seven years. This consisted of three kinds: Tools shipped overseas. Tools suitable only for machining war material. Standard machine tools in this country. The questions of import are: How much of areas A_1, B_1, and C_1 or the normal demand during these years, has been supplied? And, How much surplus is there on the market which is available to supply coming normal demand?



The curve of quality is the basis on which many rely in feeling that the competition with second hand tools need not be greatly considered by the manufacturers and sellers of new machinery.

Effect of Price on Machine Tool Sales

The basis on which machine tools are bought should be carefully considered. The assumption is usually made that lowering the price will increase the demand and the demand will be in proportion to the price drop. There is some such tendency but it is a dangerous generality.

The average level of prices of machinery at the time of considering a new installation is of great importance. The products of a new concern must enter into competition with similar products made by concerns already in existence with lower equipment costs and must look forward to competition from concerns still to be established. If the level at the present time is high, the overhead with relation to existing plants will be out of proportion and unbearable, thus causing the postponement of the project if it is felt that there will be a decrease in the general level of prices.

However, a fact that is usually lost sight of, the determining factor in the selection of machinery is not the overhead due to the machine cost but the total unit cost per dollar of product, including labor and all overhead, due to the use of this machinery. Otherwise none but the cheapest of machines could ever be installed.

What Is Sold Is Ability to Make Money

When it comes to replacement this fact is more usually taken into consideration and a manufacturer of special and high production machinery has been astounded to find that increasing the price has increased the actual number sold! The reason is simple. He was actually selling, not the machine, but the ability to make money using this machine, and raising the price enabled him to spend more money demonstrating the fact that this machinery would actually cost less per dollar of product than the machinery it was designed to replace, and so increased his sales.

No matter how low the price of a machine tool may fall, there is no demand for it unless there is a demand for the product that may be made on that machine. Therefore the inducement to shade price cannot be great unless as a desperate remedy taken by manufacturers desirous of attracting more than their share of business due them, based on the quality and suitability of their product. It is an ineffective method for it is immediately met by price cutting even more severe, the entire trade suffering.

Effect of Past Six Years

The story of the past six years is briefly as follows: First plant owners paid up their debts.

Next the owners took something for themselves. They then expanded their shops, putting in more productive and powerful machinery, and building jigs. Part of the profit was thus capitalized.

They next distributed dividends. These, of course, were large, and are not available for use.

The excess profits tax took much. This, in the case of most concerns, was allowed for in figuring the price of the machinery sold. Cost keeping was valuable mainly in determining the figure of price to permit paying the dividends desired.

Newcomers entered the field. Starting on a shoe string, forced to pay extravagant prices for equipment, tools, material and labor, they did it. In these cases the excess profits taxes operated to curtail the acquisition of a sufficient surplus to permit the writing off of losses due to coming diminution of prices and to care for the probable hard times. In many instances plants were owned by men of advanced years. They took what they wanted, then got from under. Some moved too quickly, some too slowly.

It may be assumed that the average financial condition of the machine tool manufacturing companies is good, in that most of the plants are paid for and that there is a fair working capital. A few will have put away in their boxes enough Liberty bonds to pull them through, no matter what happens.

The proportion of average demand to producing capacity is even higher than it was up to 1914. There is little call for machine tools now. As consumption of goods always means more producing machinery and the world has gone without for seven years it is felt that sooner or later this will be in felt in the machine tool trade.

Stocks in manufacturers' hands are not very large and any increase in the demand will be felt very quickly.

Summarizing:

Over-capacity coupled with less than average demand, as in 1914
Foreign demand non-existent, as in 1914
Bank accounts moderately full instead of flat
Competition still wearing kid gloves instead of being murderous as in 1914
General level of business much higher than before
Industry full of fighting spirit instead of merely hanging on
Field of non-competitive offerings greatly diminished through development of new and high quality production machines

Questions the Consumer Is Asking

With general level of prices dropping, the consumer is asking some questions.

Will prices go lower?

In a good many lines, yes, for they are doing it here and there now. *This decrease will not be even and will not be a reason for making or deferring purchases, except in a few cases where the prices are out of proportion to pre-war asking. In most cases the drop will be small after the initial one.*

Are makers of machine tools prepared to make concessions from the standpoint that they have reduced manufacturing costs?

Makers are not and will not be willing to make concessions on the basis of reduced manufacturing costs. They cannot. Their plants are now equipped to make machinery in the most economical method they know, in much larger quantities than there is any prospect of their being called upon to furnish. Every producer knows that when tooled up for big output low costs come only with high production.

This is a general statement and does not apply to such lines as bench tool grinders, polishing heads, and other machines of popular character, the demand for which is in direct proportion to the lowering of prices.

It does not apply to enormous machines the major part of whose cost is for material. Raw material prices are receding and that of heavy machinery must necessarily follow. Not to the same extent, however, because much overhead remains fixed irrespective of the output; therefore, the lower the output, the higher the actual cost of the fixed charge per unit.

Where will the reduction of price come from?

Right out of the profit and loss account. Those whose financing was sound will write off the decrease in plant value, equipment value, and realizing the change in the times will cut the percentage they figure they need. The others will have to.

In the case of machinery out of competition because of special character, or the supreme quality, there may be some shading because of the trend of the times and the industry, but merely to the point where reduced material and labor prices permit and where the price level will return the greatest profit.

Are workers growing more efficient, and if so, how much?

They are, and would grow still more efficient if there were need for it. In one manufacturing plant within a month skilled tool makers were used as laborers to move machinery and their foreman was instructed not to rush the work! They were being held so that when a change in conditions occurred they would not be crippled. When such conditions hold, the question of improvement of labor efficiency is not the determining factor is price.

Are there any improvements in processes or methods by which unit costs may be reduced?

Could machine tools be standardized to the same extent as is the case with automobiles and were the market as limitless, there would be possibilities of improvements. Modern quantity production methods introduced by machine tool builders could be used by them and much fitting and expensive machine labor eliminated if there were sufficient demand. This has already been carried to a high degree in the case of certain makers of small machine tools of universal use, such as sensitive drill, polishing heads, bench grinders, etc., and the prices reflect the reduced costs.

The limit of saving is reached more quickly in the case of machine tools because of the building necessities of alignment and fit which can be obtained more inexpensively by hand unless the output is very large.

The constant pressure of the buyer of machine tools is not toward standardization except in a few lines. It is directly the other way. When you have a production problem you want a machine that precisely fits that problem. If that is too costly or would take too long to get, you buy the nearest to the ideal. This in all probability is semi-standard only.

Even in the standard lines you are not satisfied with any machine of a particular size, though it is to go into a shop with other similar machines.

A lathe, for instance. It must be one suited to the particular job, whether it be the tool room, the repair shop, for finishing, for roughing, or for what not.

The machine tool consumers cannot afford to have machine tools too closely standardized because these tools must be used to fit various demands, and price fades into relative insignificance compared with the profit possible with a machine that exactly fits the shop requirements.

What Recourse Has the Machine Builder?

His dilemma is hardly enviable. Vending a commodity the demand for which is only responsive to a limited degree to price cutting and unable to make money except with a high output, he seems almost to be without a solution for his problem.

He is—considered from the production end. The remedy lies entirely in the managerial field. A glance at the advertising pages of the mechanical journals will show that many realize this.

He must first cut his overhead. Every square foot of his factory must work, either for himself or for somebody else. Every machine must work. Renting, or contract work for others is the answer some of the largest manufacturers have reached.

He must keep his engineering and superintending force busy, finding some product in which the proportion of engineering and overseeing time is high.

He must diversify his product. The curse of the machine tool business is its alternate periods of prosperity and poverty. They are far more violent than the changes in consumption because the demand for machines only reacts to excess of demand for products—normal and subnormal times leaving him dull.

The Possible Demand

His prosperity as a machine tool builder is largely dependent upon the possible demand and how far he may go as a salesman in developing it.

Every machine tool builder realizes that there are very many places where his product could be placed in the dullest of times and be a good investment, actually paying for itself shortly.

The difficulty is that it costs an enormous proportion of the sales price to find these places and demonstrate the facts. It may be interesting to consider the costs of selling.

This can be done in one of two ways or a combination of both. The product may be disposed of through the builder's own representatives or it may be disposed of through agencies. It may be that in some territories he will find it best to use the one method and in other sections the other.

In good times, when selling is easy and demand is heavy, the factory representative is the most economical. In poor times the agency is the best because he is not paid unless a sale is made, while the factory man is paid right along.

Where the machinery is special it is often impractical to use an agent because few are sufficiently conversant with the machinery and its possibilities to render adequate service. For standard machines sold upon a competitive basis a widespread system of reliable active agencies is probably considerably more economical.

The purchaser naturally pays the cost. It is probable that in the long run there is little difference in cost for the two methods so that agency costs may be considered representative of selling cost.

To-day agencies receive a commission of 15 and 20 per cent and even higher for selling machine tools. There are in addition advertising costs and office and service costs, so that you can figure that each time you buy a machine tool you pay 25 per cent and upward just for the privilege of getting it from the sellers' factory. Some of these expenses are unavoidable, but the total efficiency of the process is wofully low.

One of the largest parts of the cost in the case of high power or special or automatic machines is the cost of specialized selling and the demonstrating. The word demonstrating is a misnomer. It actually means educating the producing force in the buyer's factory in the use of this machinery. Where there is a possibility of selling a large number of machines of that make in any one factory, the total cost on the installation will make a reasonable charge on each machine for the seller to carry. As this cost is averaged per machine sold, however, it means that the big buyer is paying for the education of several of his smaller competitors.

The cost of doing this frequently has wiped out the entire profit of selling a machine. This is what limits the extent to which any machine tool manufacturer can carry his campaign of sales.

The Buyer Pays

Every manufacturer is paying heavily for not having the machine which would make him a profit if he had it. Machines that belong on the scrap heap rob both that useful institution and the owner's pocket.

A concern in the country still operating machinery it would pay it handsomely to replace would be as conspicuous as a tooth in a hen. In many instances the substitution could be effected at no cost, the machines being too large and expensive for the work they are doing and suitable machinery could be obtained for less than the resale value of the old. More usually, particularly in a growing business, the change will be toward a more complex and powerful machine.

The machine tool sellers have done a great educational work, the extent and value of which are not generally realized, and for which they have never received recognition or thanks. Between the engineering and sales service of tool steel and machinery manufacturers, the producing costs in many shops in this country have been brought to an unbelievably low unit point. In 1914 sellers felt that they had reached a point beyond which it would not pay them to go further in educating the buyer. This is even truer to-day.

The final responsibility is that of the buyer. If he needs a demonstrator or consulting work with regard to his tool equipment, he should pay for it. This will make the price of the machine much less expensive to the man who is willing to do his proper part in studying new facilities and new machinery, or to the one who has men who know how to handle that particular machine.

This service has fixed another cost on the buyer. Depending on the demonstrator, the factory organization does not usually know the machine thoroughly, its capabilities or its eccentricities, and therefore its final possibilities are never realized. Maintenance costs are also higher.

It is the custom of salesmen of this type of

machine tools to keep in touch with users, but all that an outsider can hope to do is to hit the high spots. He cannot devote the time or study to its use in any one shop, nor can he know the inside problems of the shop so intimately as to get maximum results.

The Situation Summarized

THE price to the consumer will go lower, but not very much.

As price pressure increases, the cutting will be accompanied by reduction in present no-cost services.

The machine tool manufacturer will lower his overhead by engaging in other manufacture; in some cases new or other machines for the same market, in other cases (and preferably) for other markets, and if possible for the ultimate consumer.

Accompanying this relief from dependence on the one line will come less subservience, reflected in the reduction of free services.

Ultimately, under the pressure of competition, the weaker of the machine tool makers will be forced into other lines, or extinction.

The machine tool manufacturer realizes that the market for his product is by no means exhausted, but the amount he can afford to spend in intensive selling is limited and has about been reached. The future extension lies either in co-operative work to rouse the buyer, or the pressure of the times making the buyer wake up and actually go out and buy.

In 1914 he was on thin ice and could not help himself. To-day he can and will help himself.

COPPER CONSUMPTION LESS

New York Mining Engineers Discuss Substitutes and Other Causes

"Copper Metal—From the Consumer's Point of View" was the general subject discussed by four speakers at the February meeting of the New York Section of the Institute of Mining and Metallurgical Engineers, Wednesday evening, Feb. 2, at the Machinery club, New York. The fact that stocks of copper are large, that prices are low and that consumption is light more than two years after the war was emphasized. A presentation of views on this condition and the consideration of explanations were the object of the meeting.

Ivy L. Lee, 61 Broadway, New York, read a highly informative paper which gave some results of an investigation of the uses and lack of use of copper as a result of the war. He developed the fact that in several industries substitutes were now being used, which had of necessity been devised during the war, with the result that consumption of copper had been seriously cut down as compared with pre-war days. He referred to the plumbing industry, the hardware industry, the automobile industry, roofing, nails and special applications. The speaker insisted that while the substitutes such as ingot iron, Monel metal, aluminum, etc., were of value in their respective fields, they could not replace copper for certain purposes. He advocated an educational campaign which would impress the general public and the ultimate consumer with the unrivaled qualities of copper, so as to restore the metal to its former place in industry. He felt that the copper producers as a whole had neglected this phase of their industry and had been outstripped by the producers of substitutes for copper and copper alloys.

H. A. C. Jenison, U. S. Geological Survey, Washington, discussed new uses and abandoned uses of copper. He reviewed the results of the use of copper-bearing steel as a non-corrosive material, citing recent articles on copper steel sheets and tie plates, steel cars of copper steel plates and so on. An extensive application of such steel would involve the consumption of considerable copper. As to abandoned uses, Captain Jenison substantiated several of the cases cited by Mr. Lee, such as the substitution of steel or iron parts for copper in the automobile industry, and of special alloy or other substitutes for brass in the plumbing industry.

W. S. Barstow, electrical engineer, 50 Pine Street, New York, spoke on some of the phases of the electrical apparatus and machinery industry, particularly the financial, as affecting the buying of copper during the war and since.

William S. Murray, chairman Super-Power Survey, 709 Sixth Avenue, New York, presented a brief but impressive analysis of the super-power scheme in the zone of which New York is the center, emphasizing what it means in efficiency in industry and railroad transportation, in the saving of coal and in general prosperity.

New Records at South Works

All of the open hearth furnaces of the South Chicago plant of the Illinois Steel Co. showed a steady gain in tonnage during the last half of 1920 following their equipment with Danforth checkers and slopes, asserts the *South Works Review*, an employees' publication. In the week, Dec. 26 to Jan. 1, a record-breaking performance was made by furnace No. 9 of the No. 1 open hearth plant. Thirty-one heats yielding 1859 tons were obtained in that period, the average tonnage per day being 266. The average interval from tap to tap was 5 hr. 36 min. and the fastest heat 4 hr. 55 min. Fifty per cent scrap was used in the charges.

The No. 2 rail mill of South Works has also made a record. In 1918 a yearly rolling record of 144,313 tons was established—an average of 236.4 tons per turn, while shipments totalled 148,078 tons. For 1920 a new record was made, the annual output having been 150,168 tons, an average of 249.5 tons per turn, and 153,075 tons were shipped.

The method of collecting the iron and steel scrap purchased by the Velick Scrap Iron & Machinery Co. from manufacturing plants in and around Detroit includes the use of several motor trucks and 50 double-end 5-ton Detroit trailers. The latter are dropped off at the various plants and when loaded are hauled to the Velick yard. The yard facilities for handling, sorting and preparing the scrap include a 20-ton locomotive crane equipped with an electric magnet for handling bulky pieces and clam shell buckets for handling loose material. This crane is also used for switching full and empty cars. A platform scale built to accommodate a 50-ft. car weighs and automatically computes and stamps on a ticket the gross, tare and net weights of outgoing carloads. Other yard equipment includes alligator shears and hydraulic presses for baling sheet stampings. Each press is driven by a 50 hp. motor.

Reflecting business stagnation is the sharp decline in the number of loaded cars handled by the Ohio Region of the Erie Railroad in January. Last month 120,635 carloads were moved, 34,557 less than in December and 78,502 less than in September, the peak month in 1920. The number of empty cars moved increased, owing to the heavy movement of empties to owning carriers. The total number of cars handled in the Ohio region in January was 201,008, as compared with 222,778 in December.

High-Speed Steel Manufacture in Sheffield

Great Expansion in War Time — Present Practice, Costs, Prices and Raw Material Sources — Wages Much Below American

BY PAUL M. TYLER*

THE British manufacture of high-speed steel is concentrated in the city of Sheffield, where there are some 150 different producers. About 20 of these may be considered fairly large. There is also one large firm (Armstrong-Whitworth) which manufactures high-speed steel as well as milling cutters, twist drills, reamers and other small tools at Openshaw, a suburb of Manchester. Most of the firms make all classes of crucible steel and none of them devote their entire plants to the production of high-speed steel. Perhaps a half dozen of the largest firms also make finished tools in the same works, but by far the larger number of the establishments are merely melting plants which must send their ingots out to custom mills, where the steel is forged or rolled into finished forms. This "rolling for hire" is a common practice in the district and is generally conducted on a straight royalty basis, the finished bars or sheets, together with the scrap, being turned over to the steel-maker, who markets the product either direct or through merchants.

Maximum Output of High-Speed Steel

The maximum output of tungsten steel in Great Britain was in the year 1918, when it is estimated that from 18,000 to 19,000 tons of high-speed steel was produced. Following the cessation of hostilities, the high-speed steel trade was almost at a standstill due to the accumulation of stocks. The home consumption recovered gradually, partly due to the extraordinary stimulation of the automobile business, while orders from foreign countries, whose supplies had been severely restricted during the war period, served to keep the works occupied almost up to the limit set by the difficulties of securing raw material, transportation troubles and the shortage of fuel. Labor troubles were a less important factor, although there was a great deal of complaint that the workers were not putting forth their best efforts. Due to these various causes, the output in the last two years has been maintained at scarcely 50 per cent of the rate established in the last year of the war. It is doubtful if the production of high-speed steel in England during 1920 exceeded 10,000 tons, with the chance that if complete reports were available they would show materially less than this.

The extraordinary growth of the industry during the war period can in large measure be attributed to the activities of a committee of high-speed steel manufacturers and consumers which was formed in Sheffield in February, 1916, for the purpose of securing adequate supplies of tool steel for war purposes. The supply of tungsten, which was under strict Governmental control, was allocated through this committee, which was attached to the Ministry of Munitions. At that time the production was only about 6000 to 7000 tons annually.

Tungsten Supply

Another factor which aided greatly in favoring the expansion of the manufacture of tungsten steel in Sheffield was the organization of the High Speed Steel Alloys Co., Ltd. This is a co-operative concern formed by Sheffield steel-makers to assure themselves of adequate supplies of tungsten metal powder. A large works was erected at Widnes in 1916 for the treatment of tungsten ores. The old soda-fusion process is used.[1]

Tungsten metal powder, as well as ferrotungsten, were supplied, however, by six other firms in England, all of whom began the manufacture of the powder after the outbreak of the war. One firm had made a little tungsten metal powder in 1907 or 1908, but had been forced to cease its manufacture, owing to the low price at which German powder was sold in Sheffield. Prior to the war fully 90 per cent of the tungsten consumed in Sheffield for the manufacture of high-speed steel was in the form of powder, and not more than 10 per cent was used as ferrotungsten. There was a sharp reversal of the proportions during the war, and when the armistice was signed it is estimated that only about 10 per cent of the tungsten required in Sheffield was purchased in the form of the metal powder. Since the war there appears to have been a tendency to revert again to the use of powder. British ferroalloy manufacturers are in a position to supply either of these products in ample quantities, and the purity of their material is superior to that formerly supplied by German firms. All of the British ferroalloy makers use the aluminum reduction (thermit) method, and only two of them also make ferrotungsten in the electric furnace. High-grade ferrosilicon (85 per cent Si. plus) was substituted for aluminum powder to a considerable extent during the war period and is still used, at least by certain makers, in conjunction with aluminum as a reducing agent.

Other Raw Materials

Ferrochrome is now supplied almost wholly by British manufacturers, whereas before the war it came largely from Scandinavian countries and the Continent. A considerable part of the output comes from the Newcastle Alloys Co., which operates electric furnaces at Newcastle, power being supplied at low cost (probably not over about 0.5 d. per k.w.-hr.), as it is generated from waste coke-oven gas. Rhodesian chromite has been the main ore used in late years, although recently a certain amount of New Caledonian ore has been landed in England. Ferrochrome is furnished in various degrees of carbon; that commonly employed in crucible work is called "specially refined" and is broken in small pieces, the maximum carbon content of the three grades being 2, 1 and 0.75 per cent, respectively.

Ferrovanadium, of course, is obtained chiefly from the United States, although in late months a certain amount of outside vanadium has come on the British market, probably made in England from ore derived from South Africa. Since the British steel-makers use the crucible process exclusively, they are unable to use a high silicon alloy.

Swedish iron is the base for British high-speed steels. This is usually delivered at the works in ⅝-in. x 3-in. bars, which are broken up and cemented. A little selected scrap is also used. According to Dr. F. H. Hatch, formerly with the Ministry of Munitions, exhaustive tests were made at Sheffield University by Prof. W. Ripper in May, 1917, for the purpose of determining whether other than Swedish iron could be successfully used in these steels. Turning tools were made by melting (1) Armco iron, (2) specially dead-soft basic steel, and (3) Swedish iron and casting each of these melts into bars which were subjected to practical tests. The tools made from domestic iron proved equal to those made from the Swedish material, even after repeated forging. A certain amount of commercial tool steel was made during the war from British iron and steel, low in phosphorus and sulphur, but it is asserted that now Swedish iron is used exclusively in

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[1]This work and the process employed are described in *Engineering*, Vol. civ, p. 432 (1917).

the manufacture of high-speed steel in Sheffield, although it costs about 10d. per pound.

Melting

The crucible process is used exclusively. So far as can be learned, no high-speed steel is made in England by means of the electric furnace. While the electric furnace has been introduced into Sheffield and is used at most of the large steel works, British practice generally is to employ it simply for the melting up of scrap, especially for the manufacture of castings where hot metal is desirable. It is doubtful if many British steel users would accept any steel as a high-quality steel if it were not made in the old-fashioned way.

As compared with American crucible practice, the outstanding feature that will be noted in Sheffield practice is the small charges employed. The individual pots hold from 40 to 70 lb. of metal, the average charge being approximately 60 lb. Graphite crucibles are rarely used at Sheffield, the pots being made almost exclusively from local clay. The pots are frequently made in a small shed attached to the steel works. Extreme care is given to the manufacture and inspection. A few mechanical pugging mills are now in operation, but many of the works still employ the ancient practice of kneading the clay in small batches by treading. The workmen mix up the clay with their bare feet, as it is claimed that by this method any foreign material or coarse fragments can be more positively detected.

The pots are about 18 in. high and 9 in. in diameter and weigh approximately 30 lb. each. After firing, they are carefully inspected and only the best ones are chosen for making high-speed steel. The annealing is done with extreme care, the crucibles being placed upon an annealing grate, where they are heated very slowly for several hours. They are then lowered to the firing grate, each crucible being placed upon a small brick to prevent its coming in contact with the bars. It is then packed in coke or coal and heated for an hour or an hour and a half before receiving a charge. Each pot lasts only one or two heats on high-speed steel, after which it may be used two or three times more on carbon tool steel. Four heats, however, are practically the maximum.

The melting house requires no special description. Ordinarily, this is a separate building with two rows of furnaces, one on each side. The furnaces are built below the floor level, with movable covers which are level with the floor. The flues are vertical and are built into the side walls of the building. Each hole will take two pots. Most of the plants use coke as fuel, although some use coal, and there are several works in which gas firing is employed. Gas firing is not popular, owing to the greater risk of breaking the crucibles. There are two "pullers" for each bank of 12 holes or 24 crucibles.

Each charge is made up separately, an individual weigh pan being provided for each crucible. The various materials are weighed in a "weigh house" (known in some works as the "medicine house") adjoining the melting house. The weigh pan, with its charge, is carried back to the melting house and placed in front of the proper hole. As soon as the crucible is heated up sufficiently, the cover is removed and the charge is dumped into the pot through a metal funnel about 4 ft. long. Two men and sometimes three are employed in the steeling of the pots, one of them holding a long poker over the discharge end of the spout in order to break the fall of the material and prevent damage to the crucible from large fragments of the charge. The actual melting takes from four to four and a half hours, the fire being pushed vigorously all the time.

The metal is frequently teemed directly from the pots into the molds, although mixing in a ladle is becoming more common. On large ingots several pots may be used. Pouring is stopped momentarily before the mold is filled, and a "dozzle" is put on. This is a small block of fire clay, about 4 in. long, which fits into the top of the mold. It is provided with a small hole 1½ in. in diameter, through which the last few pounds of metal are poured. The hot metal in the dozzle feeds the pipe with the result that a much smaller proportion of the ingot must be cropped than when an ordinary hot brick is employed.

The ingots are allowed to cool in the molds over night and then taken out and topped. Samples are taken for analysis and the ingots are heated up slowly in an annealing furnace and left to soak at about 1300 deg. Cent. for one or two hours, after which they are packed in hot ashes or in closed boxes and allowed to cool slowly. When cold the ingots are pickled and carefully inspected.

Finishing

The finishing of high-speed steel, according to British practice, has been described by J. W. Andrew and G. W. Green,[2] who showed that the quality of the steel was not affected by the method of reducing the size of the bars, whether by means of rolls or by hammering. The usual practice is a combination of the two. Large ingots—say 6 in. x 6 in. and over—are hammered down under forging hammers (½ ton to 1 ton); medium bars are forged down on tilting hammers, and the smaller sizes are commonly rolled. Rolling is accomplished in small two-high rolls. The most important factor is to maintain a proper temperature. At low temperatures the bars check excessively and a great deal of scrap is made, but little difficulty is experienced in most plants.[3]

Losses

Throughout the whole range of the production of tungsten steels the losses of tungsten in British plants are considerably less than those commonly experienced in American works. The causes for this are not obvious, but may be attributed in large part to the extreme care devoted to each operation and attention to detail. According to statements made to the writer by various British metallurgists, the average total loss of tungsten in making high-speed steel is 35 per cent of the tungsten charged in the crucible. This figure covers the croppings from the ingots and from the bars and all defective pieces, in addition to the melting losses and scale. Melting losses are under 3 per cent, while the scale loss will average between 5 and 10 per cent. All the croppings and trimmings are remelted and the net loss of tungsten is rarely estimated at more than 10 per cent. Putting it in another way, the writer was advised that approximately 20 per cent of tungsten was added to the crucible charge with the expectation of obtaining better than 18 per cent tungsten in the finished steel. Another manufacturer adds 19 lb. of tungsten metal powder (98-99 per cent W) for each 100 lb. of steel whose analysis ranges from 17 to 18 per cent.

Wages

British wages in crucible steel making are still lower than those paid in American plants, in spite of the large advances that have been made in England since the outbreak of the war. Of special significance in the manufacture of high-speed steel is the relatively low wages paid to rollers and hammer finishers, since it is in this branch of the work that labor is the main factor in cost. On time work these workers receive 90s. per week of 47 hours. At standard exchange, this is equivalent to only 46.5 cents per hour, or a trifle less than the wages of common labor in American mills, where this class of skilled employees is paid about $1 an hour. Molders are paid on the same scale as hammer finishers in England, although in the United States they ordinarily receive slightly less. Common labor in British crucible works gets from 65 to 70s. per week, or from 33.5 to 36.5 cents per hour at standard exchange. The best-paid workers are the melters, who ordinarily receive from 180 to 200s. per week, or from 90 cents to $1.03 per hour at standard exchange.

Comparing the above figures with the wages paid in American steel works, it will be noted that the difference is greater in the case of skilled labor than in the case of common labor. The most notable British wage increases during and since the war have been in the wages paid to unskilled labor, the margin between skilled and unskilled having been greatly narrowed as

[2] THE IRON AGE, Sept. 11, 1919, p. 703.

[3] According to researches of Andrew and Green, the proper forging or rolling temperature is 1050 deg. Cent.

a result of flat weekly increases, war bonuses, etc. In the case of time-workers the actual difference between the various classes has been retained in many cases, but taking into consideration the increased cost of living, the excess purchasing power of the earnings of skilled workers generally, as compared with unskilled workers, has been greatly reduced.

Costs

Producing costs in England have increased largely during and since the war, present costs being variously estimated at three to four times pre-war. The main item, of course, is the cost of raw materials of all kinds and especially tungsten, vanadium and Swedish iron. Wages are a minor factor, although one that commands serious attention as affecting the competitive position of the Sheffield trade after the war, especially in view of the fact that the efficiency of the workers has fallen off. It is asserted by Sheffield tool steel manufacturers that the present tonnage per employee is not more than one-half what it was in 1914. While this statement may exaggerate the situation somewhat, there is no doubt that the men have developed an undue independence and are not working as hard as they were before the war.

The total cost of producing high-speed steel in Great Britain will vary under present conditions from about 45 cents to 65 cents per pound. The differences between costs at various plants will depend upon the analysis of the alloy and the relative efficiency of the operations, the former item being the more important. It is possible to figure the cost of production of a tungsten steel of given analysis with some accuracy by calculating the cost of raw materials, which constitute from 65 to 80 per cent of the total cost, and making certain assumptions based upon wages, fuel consumption and other charges.

As an example, the approximate cost of production of the best grade of high-speed steel, as prepared in Sheffield from Swedish iron and other pure materials, may be estimated according to the method outlined below. The steel has the following approximate composition:

	Per Cent
Tungsten	Over 18.00
Carbon	0.65
Chromium	3.75
Vanadium	1.25
Manganese	0.25
Phosphorus	Under 0.02
Sulphur	Under 0.02

Taking the average prices for November, 1920, of the various constituents, the cost of the crucible charges for making 100 lb. of ingot may be estimated as follows:

Estimated Raw Material Cost Per 100 Lb. High Speed Steel Ingot

Raw Material	Pounds	Price Per Lb. s.	d.	Cost s.	d.	Dollars[5]
Tungsten metal powder	20.00	3	6	70	0	$12.25
[4]Ferrochrome, 60 per cent (chrome contents)	4.00	1	6	6	0	1.05
Ferrovanadium, 35/40 per cent (Va contents)	1.25	47	6	59	6	10.41
Swedish iron	50.00	0	10	41	8	7.29
Scrap, iron contents of alloys, etc.	27.75	..	..	..	..	...
Total metal	103.00			177	2	$31.00
Fuel (coke) at 65s. per ton	350.00			10	0	1.75
Total raw materials, per 100 lb. ingot.				187	2	$32.75

[5]Exchange at £1=$3.50.

[4]Specially prepared for crucible use, not over 1 per cent carbon.

The above estimate includes melting losses (which are approximately 3 per cent), but does not take into account any subsequent losses. There is a loss of about 10 per cent from the top of the ingot, which is cropped in the first cogging operation (from about 6 in. x 6 in. down to 3½ in. x 3½ in.). In reducing to a 1¼-in. bar two more heats are required, each of these involving a scale loss of approximately 2 per cent, in addition to rejections and further scrap.

As stated above, the total average loss on all sizes of finished bars will amount to about 35 per cent of the materials charged, or about 33 per cent of the ingot. About 6 per cent comes as scale losses and is not recovered. The 100 lb. of ingot, therefore, will yield approximately 67 lb. of finished bars and about 27 lb. of scrap that may be remelted. It is difficult to estimate the proper credit to be given this scrap, as it varies in size and condition. Millings and turnings as produced by high-speed steel tool manufacturers have a market value in England of only 3d. or 4d. per pound, while ends of lathe tools, etc., cannot ordinarily be sold at over 6d. per pound. These prices for miscellaneous scrap manifestly have no relation to the value of the relatively heavy croppings and ends, which are remelted in the British crucible works, where more attention is given to working up such material than in this country, where it is commonly charged off at only 10 or 15 cents per pound. It would seem, however, that for the purpose of this analysis, the scrap credit may be taken at 75 per cent of the raw material value per pound of the ingot, thereby allowing a generous margin for losses and conversion charges.

The net raw material cost of finished high-speed steel may then be estimated as follows:

Gross cost (as above)	$32.75
Less scrap credits (27×0.3275×0.75)	6.63
Net cost, 67 lb. of bars	$26.12
Net cost per lb.	0.39

As stated above, the steel upon which this calculation is based is an extremely high-class steel, containing a high percentage of vanadium, as well as tungsten, and is made from Swedish iron and tungsten metal powder. The above raw material cost of 39 cents per pound will, therefore, be much higher than the average of British plants even on 18 per cent tungsten steels. In case British iron were substituted for Swedish and ferrotungsten were used in place of the metal powder and if the vanadium were reduced to, say, 0.25 per cent, the raw material cost on the above basis, expressed in United States currency (with exchange at $3.50), would be under 20 cents per pound.

Labor and power charges on this high-grade steel will now amount to approximately 20 cents per pound at the average Sheffield works, the distribution being about as follows:

	Cost Per Pound s.	d.	Dollars[5]
Melting and casting	0	1	$0.0175
Cogging	0	2	0.0350
Grinding	0	1	0.0175
Rolling and tilting	0	3	0.0525
Heating	0	1	0.0175
Inspection, finishing, etc.	0	3	0.0525
Total	0	11	$0.1925

[5]Exchange at £1=$3.50.

The above distribution is based upon a number of assumptions, but is probably reasonably accurate and the total cost checks closely with actual figures as given the writer by persons well informed on Sheffield practice. In the best grade of steel it may be a trifle more, but in other high-speed steels, particularly the lower tungsten steels, it is doubtless somewhat lower. This figure, however, is taken in the following summary of estimated British costs of manufacturing high speed steel:

Total Cost of Finished High Speed Steel

	18% W Best	18% W Average	14% W Average
Raw materials	$0.40	$0.30	$0.20
Labor and power	0.20	0.20	0.20
Other charges	0.03	0.02	0.02
Total cost per lb.	$0.63	$0.52	$0.42

Prices

Sales of high speed steel, as well as those of other tungsten products, were regulated by the Minister of Munitions from Nov. 30, 1917, until after the armistice. In January, 1918, the control prices on finished bars were 4s. 5d. per lb. for 18 per cent tungsten steel and 3s. 8d. per lb. for the 14 per cent grade as compared with 6s. 2¼d. per lb. on ferrotungsten (75 per cent W), and 6s. 8½d. per lb. on tungsten metal powder.

Following the removal of control in early 1919 the prices of the two main grades of high speed steel declined, along with those of tungsten. At the end of 1919 the prices of the two main grades were 3s. 6d. and 2s. 11d., respectively, per lb., delivered at buyer's works in England. Ferrotungsten was then selling at 2s. 10d. per lb. of tungsten contained and powder at

3s. 6d. Large lots of high speed steel were disposed of by the British Government in December, 1919, but prices were maintained fairly steady over the first of the year. Due to falling exchange the price of ferrovanadium increased rapidly and it became increasingly scarce, being quoted in August as high as 64s. per lb. Va, as compared with 32s. at the beginning of the year. Small advances were also recorded in ferrotungsten and powder.

Following the increases in cost of raw materials, high speed steel prices were increased almost up to the war-time control levels, the standard quotations during the latter half of the year being 4s. 3d. for 18 per cent and 3s. 6d. for 14 per cent. While both tungsten and vanadium became materially cheaper in the last quarter of the year, high speed steel prices were maintained at these levels (up to the end of November), although there were few sales. On the first of December tungsten metal powder was selling in Sheffield at 3s. 6d., and low carbon ferrotungsten (80 to 85 per cent) at 2s. 9d. While these prices were the lowest recorded since the war, German alloys were being freely offered at competitive prices. The ferrovanadium situation was also improving, this alloy being not only cheaper but also more easily obtainable, particularly the low silicon grades necessary for crucible use.

British base prices are on rounds and squares from ½ in. up to 3 in., as compared with an American range of ⅝ in. to 2 in. The extras, however, average higher than American lists, a remarkable feature being the larger extra charged on heavier sections. The British list adopted under war time control and still in operation is as follows:

Standard Classification of Extras

Rounds and squares, 3 in. to 8 in. inclusive	4d. per lb.
Rounds and squares under ½ in to ¼ in.	3d. per lb.
Flats under 1 in. x ⅝ in. to ½ in. x ¼ in. and all sizes over four times in width over thickness	3d. per lb.
Bevels of approved sizes and sections	6d. per lb.
If in oils	3d. per lb.
Packing	4s. per cwt.
Bars cut to length	10 per cent extra

Exports of British Steel to the United States

A considerable amount of British high speed steel is consumed in the United States, the amount being variously estimated at from 10 to 25 per cent of the total American consumption. Practically the entire American imports of alloy or crucible steel as listed in the Department of Commerce statistics of imports during the last three years have consisted of British tool steel of which high speed steel constitutes the chief item. Other tungsten steels, notably saw sheet containing about 1.25 per cent tungsten, make up most of the balance.

As shown in the Monthly Summary (September, 1920) of the Foreign Commerce of the United States, the imports under the above classification for the first nine months of 1920 were 7,928,513 lb., valued at $2,363,178, as compared with 4,221,784 lb., valued at $1,014,241, for the same period in 1919. It will be noted that the average invoice value per pound (which is based on the average wholesale price in England) was approximately 30c. in 1920 and 45c. in 1919. The falling off in value per unit of quantity may be attributed to an increased proportion of low tungsten steels, as all grades were imported.

While British high speed steel prices have ranged much lower than American prices, the difference is not sufficient under present conditions to yield British steel makers much larger profits on American sales as compared with their home market. The increase in freight rates from 1¼ per cent to 2 per cent in the spring of 1920 considerably advanced the cost of shipment, but this was more than offset by the further depreciation in exchange.

The actual charges on a large shipment of 18 per cent British tungsten steel delivered in New York in the fall of 1920 were as follows:

	Per Gross Ton £	s.	d.
Sheffield price, 4s. 3d. less 5 per cent	452	4	0
U. S. consular fee	0	1	6
Carriage to Liverpool	0	15	0
Shipping charges	0	7	0
Ocean freight (2 per cent ad valorem)	9	0	11
Duty (15 per cent ad valorem)	67	16	7
Cartage in New York	1	3	0
Total delivered cost	531	8	0

With exchange at $3.50, the above represents a net delivered cost of practically $1,860 per ton of 2240 lb., or 83c. per lb., as compared with a prevailing price of approximately $1.15 in New York. This leaves a margin of over 30c. to cover selling costs, New York warehouse charges, and additional profit. If the exchange rates advanced to $4 and other charges remained the same, the British manufacturer would have to reduce his export prices, which are the same as the home sale prices, in order to sell in the New York market, as the relative cheapness of British high speed steel quotations is now due solely to the depreciation of British currency in terms of the American dollar.

FRENCH OUTPUT REDUCED

Blast Furnaces Going Out for Lack of Orders—Lower Fuel Prices

(Special Correspondence)

PARIS, FRANCE, Jan. 5.—The iron and steel situation is regarded as far from brilliant. There is a good deal of uncertainty as to the decision to be taken by the Bureau Officiel des Charbons (coal bureau), though it is probable that this organization will authorize free transactions and competition in coal. It is hoped the reductions in fuel prices effective Jan. 1 will give some stimulus to demand.

As in Belgium, the lack of orders is forcing makers in the Longwy basin to bank their blast furnaces. The Société Anonyme des Hauts Fourneaux, Marc Raty et Cie., at Saulnes near Longwy, has just banked the two blast furnaces that it had been operating. The Société Anonyme des Acieries de Longwy has banked the blast furnace of the Moulaine division. At the Mont-Saint-Martin (Luxemburg frontier) plant, where eight blast furnaces had been damaged in war time, three have been lighted. At the Micheville plant of Micheville-Villerupt the only blast furnace that was in operation has been banked.

Of the 1,204,701 tons of ingots and castings produced in the first half of 1920 Alsace-Lorraine contributed 469,243 tons, the Center district 250,924 tons, the East 190,712 tons and the West 106,992 tons.

The production of pig iron and ferroalloys in France in the first six months of 1920 was 1,358,856 tons. Of this amount 32,919 tons was produced in electric furnaces. The number of furnaces in operation increased from 69 on Jan. 1, 1920, to 82 on July 1.

The Comité des Forges de France has just brought out a book, "La Sidérurgie Française," which was to have been published in 1914 on the 50th anniversary of the organization. The book had been written and the typesetting entirely completed at the time of the declaration of war. It treats two problems always of interest: the equilibrium to be established in a country between its supplies of iron ore and coal, and the possibilities of disposing of its iron and steel output. The volume contains 600 pages to which are added statistical tables of iron and steel and mining production of the principal countries.

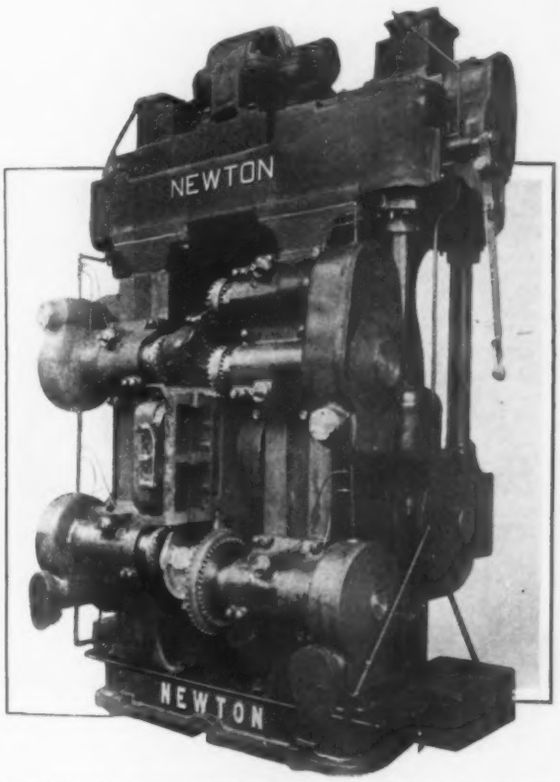
By decision of the regional tribunal of Metz, chamber of liquidations, the concessions of the iron mines Carl-Lueg and Auguste-Servet were adjudged to Hagondange for 6,000,000 francs, not including the value of the stocks. The same decision assigned to Hagondange the metallurgical plant of Maizieres-les-Metz for 2,500,000 francs. But the carrying out of the decisions will remain suspended until the outcome of a process begun by the Société Metallurgique de Sambre et Moselle involving its claim to ownership of the Maizieres plant.

The Illinois Steel Co., South Chicago, has secured a building permit for the construction of a one-story brick gas washer building, to cost $20,000.

Drum Type Continuous Milling Machine

The continuous milling machine shown in the accompanying illustration is typical of a class of machines developed recently by the Newton Machine Tool Works, Twenty-third and Vine streets, Philadelphia, for machining surfaces. It may be utilized either for machining one surface on two castings or two surfaces on one casting at the same time. Milling of the two surfaces at one time is preferable, it is explained, because if two castings are placed side by side and one operation on each performed, double the amount of handling is required over that necessary if both operations are performed at the same time.

The illustration shows that two small cutters are used for roughing and one large cutter for finishing the surfaces of the cylinder block, also that the two



Drum Type Continuous Milling Machine Built by the Newton Machine Tool Works, Inc.

small cutters are not operating upon the same section simultaneously, and the roughing and finishing cuts do not occur simultaneously upon the same casting. By machining both operations at one time on the same casting, it is explained, parallelism is obtained.

All spindles have individual adjustment and are driven by worms and worm wheels, so arranged that the cutting speed of the finishing cutters is 80 per cent of the cutting speed of the roughing cutters. Various speeds to the cutters are obtainable by pick-off change gears. The drum is rotated by herringbone gear through worm and worm wheel at predetermined rates which also are variable by the use of pick-off change gears. The drum spindle is of double taper bearing construction with fine adjustment to prevent end motion, the other bearing of the drum spindle being provided with a take-up bushing of the split taper type.

All gearing, splined shafts and revolving parts are fully inclosed and run in a bath of oil, pumped from the reservoirs on either side of the machine, to which the oil returns after having passed through the various bearings. All slow running bearings such as the spindles, are lubricated by pipe connections, thus providing a special system of oiling in order that they do not become flooded.

In chucking the piece, one clamp with a double bearing is used thus simplifying the handling operation. Machining the top and the base of the cylinder block as shown, it is stated, is accomplished at a production of 25 pieces per hour. This production, it is explained, has been exceeded in test operations, but the figure given is a production figure. It is pointed out, that owing to the high production capacity, saving of floor space and labor cost is had. Machining both surfaces simultaneously on the continuous machine as opposed to the method of machining one surface on each of two castings, it is stated, also makes for an increase in production.

Production of Refractories Curtailed

PITTSBURGH, Feb. 7.—Refractories prices hold unchanged at the recent reduction, but there has been no improvement in the demand nor are manufacturers being flooded with releases against unshipped orders. Because of the dullness, there has been a further curtailment of plant operations which now average less than 50 per cent of capacity. One or two companies are running at a higher rate, but as shipping instructions do not exceed 50 per cent of normal production, output in excess of this mark means the putting into stock of a good many brick. This is something that most manufacturers are trying to avoid on the basis of present costs and the possibility of a further cut in prices before business again revives. The Steel Corporation still is running at a very high rate in its iron and steel making departments and continues to specify freely against orders, although shipment to one of its Shenango Valley works recently was held up owing to the fact that stocks at this plant had become more than ample for present requirements. Owing to the lack of much improvement in operations of the independent steel companies and the merchant producers of pig iron, not much business is coming from these sources.

We quote per 1,000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $50.00	$35.00 to $40.00
Ohio	40.00 to 45.00	30.00 to 35.00
Kentucky	40.00 to 45.00	35.00 to 40.00
Illinois	40.00 to 50.00	30.00 to 40.00
Missouri	50.00 to 55.00	35.00 to 45.00
Silica Brick:		
Pennsylvania	45.00 to	50.00
Chicago		55.00
Birmingham	56.00 to	60.00
Magnesite Brick:		
Standard size, per net ton		100.00
Chrome Brick:		
Standard size, per net ton	80.00 to	90.00

Some Improvement in the Pacific Northwest

SEATTLE, Feb. 1.—A little more activity in the demand for steel from the Orient is reported by exporting houses this week, with the Philippines in prominence in point of volume desired. While the number of orders to be placed is larger, the amount of each is smaller. The leading point in this demand is the Philippines, and exporters could make delivery of some gratifying orders in February and March but for the financial condition there. Japan is waking up, indicating some recovery from the disastrous conditions that have prevailed there since early summer. Exporters here feel that as goes Japan, the strongest of the Oriental markets, will go the entire Orient.

Inquiries for machine tools have multiplied within the past 10 days to an encouraging extent. These inquiries are coming from all over the North Pacific coast jobbing territory. The desirable machinery in the dismantled shipyard stocks now offering are giving out in heavy-duty machinery, and it is felt here that within the next 30 days much of the lost trade that formerly went to jobbers will be restored.

Jobbers are looking for a reduction on the Steel Corporation price of sheets, but what that reduction may be will depend, it is thought, on how badly the outside mills will want the tonnage. This situation is just the reverse of what it was a few months ago.

Wholesalers are passing all declines immediately to the trade, which in turn is not functioning in that direction, jobbers declare.

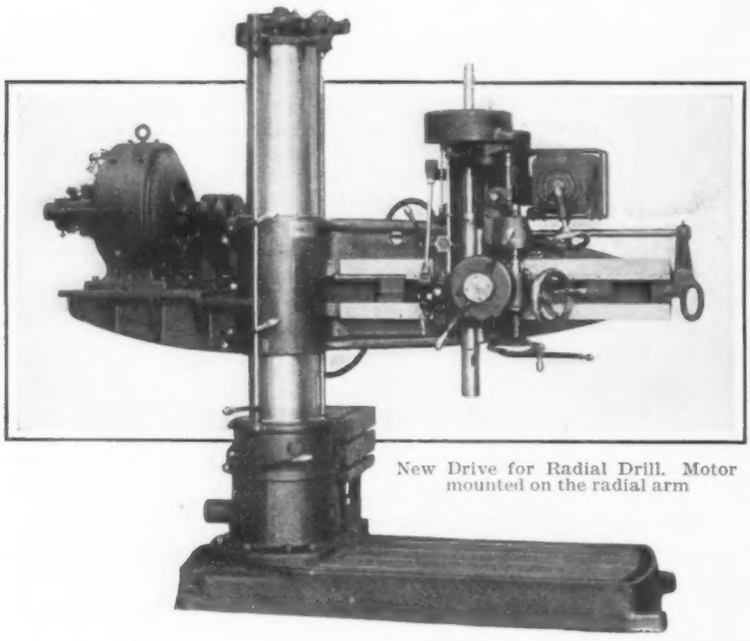
The American Society of Mechanical Engineers will hold its spring meeting in Chicago at the Congress Hotel, May 23 to 26, inclusive. Sessions are planned on aeronautics, fuels, management, material handling, machine shop, power, forest products and railroads.

New Drive Arrangement for Heavy Duty Radial Drills

A new drive arrangement in which a 3 to 1 variable speed motor of any standard make or speed is placed upon the radial arm and a Cutler-Hammer controller placed directly on the spindle head or on the arm girdle is being furnished by the Fosdick Machine Tool Co., Cincinnati, with the Fosdick 4, 5 and 6-ft. heavy duty radial drills.

The arrangement serves to eliminate two sets of bevel gears, to aid in balancing the arm, to remove the motor from the dirt which accumulates about the floor and to give additional room around the base. Using any standard 3 to 1 variable speed motor does away with the making of special patterns and castings for each particular type of motor. A bakelite pinion on the motor shaft varies in size according to the speeds of the motor selected; other gears are kept standard.

It is to be noted that only one motor is used and that the elevating mechanism drives from this motor through the regular standard gear arrangement. The location of control illustrated is convenient where the work is large and the spindle head frequently on the upper and outer extreme. For the average run of work, however, the controller is located on the arm girdle, convenient to the operator's left hand. In the latter case the flexible conduit is eliminated.



New Drive for Radial Drill. Motor mounted on the radial arm

New Carbon Dioxide Recording Equipment

The Uehling Instrument Co., 71 Broadway, New York, has introduced a new model carbon dioxide (CO_2) recording equipment, known as style U, which embodies improvements over the superseded model. Chief among the advantages pointed out are quick action, greater accessibility and simplicity of parts and the economy of combining in one machine means for determining CO_2 simultaneously from any number of boilers, up to a total of six.

A single unit CO_2 equipment for one boiler consists of three principal parts, the CO_2 meter proper, recorder, and auxiliary boiler front indicator. The meter is placed where convenient, its function being to actuate the boiler front indicator and recorder in the engineer's office. The flue gas is analyzed—that is, the CO_2 is extracted—in the meter. The principle involved in the operation of this machine depends upon the change in pressure caused by a change in volume in a stream of gas flowing through two apertures.

With each unit is included a preliminary filter which removes soot and dirt from the sample before it reaches the intermediate and final filters on the machine. This has been redesigned so that the filter chamber can be quickly cleaned without interrupting operation of the machine.

Multiple equipments combine in a single outfit means for measuring CO_2 from two, three, four, five or six boilers independently and simultaneously. It is most economical to equip the boilers in batteries of six each, but this is not absolutely necessary, inasmuch as the CO_2 meters are now built on the unit or sectional plan, and may be added to from time to time. For example, a plant can purchase a single-unit, two, three, four or five-unit equipment initially and readily attach additional units, up to a total of six, as new boilers are installed.

With multiple unit machines each boiler is equipped with its own recorder, auxiliary boiler front indicator, preliminary filter, and absorbent chamber with necessary appurtenances, but the aspirator and other parts of the master unit serve all units in common.

The recorder operates on the hydrostatic principle, by which all springs, levers and joint movements are avoided. It makes a continuous record of the percent CO_2, furnishing an autographic history of the operation of each boiler for the day, showing when fires receive attention; when and how often furnace doors are opened, or how often stoker speed and fuel bed thickness are changed; fires broken and cleaned; effects of changes in damper regulations and methods of firing.

The purpose of the boiler front indicator is to guide the fireman in supplying the right amount of air to burn the fuel with the least loss of heat up the chimney.

The CO_2 equipment may also be combined with Uehling pyrometers to give continuous records of both CO_2 and stack temperature on the same chart.

Lubricating Engineers' Society

The American Society of Lubrication Engineers has come into being. It was organized "to promote a better understanding of the problems of lubrication and the use of liquid fuels, including all problems of application and conservation." The society has issued a journal under the name, "Scientific Lubrication and Liquid Fuel." The first issue has a total of 48 pages of the 9 x 12-in. size and contains articles on viscosity, testing of oil, colloidal fuel and other subjects.

William F. Parish, Sinclair Refining Co., is president of the society; Carver Wood, Wayne Oil, Pump & Tank Co., Fort Wayne, Ind., is first vice-president; N. M. Griffin, Mack-International Motor Truck Corporation, Chicago, is second vice-president; L. A. Stewart, Anderson & Gustafson Co., Chicago, is third vice-president, and George E. Fuller, Monadnock Block, Chicago, is executive secretary. Charles B. O'Hare is editor of the journal, and the publication office is at 30 North Michigan Boulevard, Chicago. The constitution and by-laws have been prepared in printed pamphlet form and a copy can undoubtedly be had by addressing the executive secretary.

Toledo Crane Co.'s New Plant

The Toledo Crane Co., Bucyrus, Ohio, successor of the Toledo Bridge & Crane Co., Toledo, Ohio, which is constructing new buildings, as announced in THE IRON AGE of Dec. 9, expects to have them completed by March 15. C. F. Michael, president; W. F. Billingsley, vice-president and general manager; A. G. Stoltz, treasurer; C. Gallinger, secretary, with C. H. Dexheimer, are the stockholders and directors. All stock has been paid in and none will be offered for public subscription. The main office will be located at Bucyrus, with sales offices in New York, Boston, Philadelphia, Pittsburgh, Buffalo, Cleveland, Cincinnati, Chicago, St. Louis, Kansas City, Seattle, Salt Lake City, San Francisco, Birmingham and Minneapolis.

Continental Steel Prices Fall Further

German Machinery and Hardware Trades Feeling Competition—Imports of American Ship Plates, 60,000 Tons — United States Imports German Hardware

(Special Correspondence)

BERLIN, GERMANY, Jan. 24—While the steel trade remains quiet, the rate of production continues at about the level of previous months. As the time approaches for the readjustment of prices opinions foreshadow a general reduction. As will be recalled, the present scale holds till the end of February. It is reported that the Iron Industry Union will begin in about a fortnight to hold conferences on the new scale. While manufacturers opposed the existing scale as involving too heavy a cut, most of them are now convinced that still lower prices must be adopted. That conviction is based more upon what has been going on in outside markets than at home. A strong impression has been made upon the minds of German iron masters by the further reductions in America, England, France and Belgium.

Price Reductions in France

In France blast furnace coke was reduced some time ago from 250 to 175 francs per ton, and more recently a further cut to 135 francs has occurred—thanks, doubtless, to the increased arrivals from Germany under the Spa arrangement. This will mean a further reduction of iron and steel. It is reported that a cut of 60 to 80 francs on foundry iron and 50 to 60 francs on hematite iron will be made.

Steel prices have also just been reduced in France—beams to 100 francs per 100 kilos, heavy plates to 1205 francs, medium to 1280 francs, and thin plates to 1355 francs. From the Saar region, where the works are now under French control, it is reported that iron and steel works have been dismissing workmen in large numbers owing to lack of orders. The steel market there is described as being in a rather critical state. About a week ago, however, it was reported that the situation looked a little better.

Iron Ore Prices Falling

From the Ruhr region it is reported that ore prices are moving in favor of the furnaces. Foreign ores are being offered in large amounts at falling prices. The lower tendency is chiefly due to further reductions of ocean freight rates. From Narvik, on the upper Norwegian coast, the rate to German ports is now 175 marks per ton; from central Sweden 115 to 120 marks, while from Spain to Rotterdam it is 15 shillings. The price for Spanish ores at Rotterdam is 45 Dutch cents (c.i.f.) per unit of iron in ore. But the demand is very light. Further reductions in freight rates are looked for, which explains in part the unwillingness of buyers to place orders at present prices. Manganese ores from India have fallen, in response to reduced freight rates.

Under these circumstances the demand for German ores has also grown lighter and prices lower. The brown ores of the Lahn region in particular, which carry a fair percentage of manganese, have fallen heavily, and it is asserted that present prices are far from covering the cost of production. Some of the mines there have shut down, while others have curtailed production. As indicating the reduced productiveness of German labor it is mentioned that the ore output of the Lahn district in November was only 95,000 tons, with a total force of 7700 miners; whereas in November, 1913, 6700 miners produced 125,000 tons of ore.

Pig Iron and Scrap Down

The Pig Iron Association has recognized the changed position of the markets above described by reducing Luxemburg foundry No. 4 to 1485 and No. 5 to 1470 marks per ton. Steel and iron prices are in general tending to lower levels. It is admitted that concessions are often given from the prices fixed by the Iron Industry Union. Expectation among consumers of a further reduction by the union is so general that they have been sending in specifications upon old orders and demanding speedy delivery, threatening at the same time not to take the material if not delivered within the time stipulated.

An auction of old railroad material held at Cassel this month called forth very active bidding. The following highest bids were registered: Old steel rails, 1112 to 1294 marks; wrought iron rails, 1174 to 1186 marks; basic steel ties, 1058.50 to 1102.50 marks; old machine castings (not burnt), 1350.33 to 1367.33 marks; other old castings, 933.50 to 964.70 marks; old plates, 366 to 384.50 marks; old wire, 300 to 345.50 marks.

Hardware Trade Not Buoyant

The Prussian Ministry of Commerce has issued a summary of chamber of commerce reports for 1920. Regarding iron and steel, it was stated that the competition of French, Belgian, and Luxemburgian mills began to be felt more keenly after the operations of the Spa agreement gave them larger supplies of coal and coke. In December a lack of orders began to be felt in construction shops and locomotive and car shops. The situation with some of the shipyards is reported serious. The hardware trade, the report goes on, is suffering from the world market crisis that began in America. In the Remscheid region shops making tools, locks and builders' fittings were still tolerably well employed in December, but orders were falling off and lighter employment in the near future was expected. The abolition of the export duty had a favorable effect, but Brazil, Argentine and some other countries showed a much reduced buying demand. The cutlery trade at Solingen was in an unsatisfactory position. While the German market shows little ability to buy, the export trade has suffered greatly through the increased competing power of the American industry, the stoppage of demand in South America, and the depreciation of the currencies of countries to the east of Germany.

A later private report on the hardware trade says that many shops making goods of household use, like those of Solingen, Remscheid and the Thuringian district, still have considerable work in hand for the foreign market. It is expected that the building trades will improve in the spring, but in general it is believed that the reactionary tendency in the world's markets will make themselves felt also in Germany.

At the machine tool shops work has kept up pretty well, and new orders have been coming in to some extent, but it is complained that the competition of American and English shops is depressing prices. In this trade the impression is gaining ground that the multifarious reports of the past two years about the enormous needs of the world for new machinery were greatly exaggerated.

Now that the German mark is improving again the prospects for selling German machinery abroad have, of course, been diminished.

Krupps Getting Coal Mines

While large capital operations had grown less frequent for a month or two, the Krupp company now comes forward with a very large loan. It proposes to borrow 250,000,000 marks at 5 and 4½ per cent. The new capital is in part required for carrying out a partial annexation of the Constantin der Grosse coal mine, which is one of the largest independent mines in the Ruhr district. Its stock market quotation represents a capital of 300,000,000 marks. The property adjoins the Hannibal and Hannover mines, already

owned by Krupp, a fact that will facilitate its exploitation. In the Ruhr district it is also believed that Krupp will take over the Helene and Amalie mine, which represents a value of about 125,000,000 marks.

Polish buyers have been exerting themselves to induce the German Government to grant them export permits for shipping Silesian iron into Poland, but the Silesian mills themselves have refused to support them. They hold, as is reported, that it is not opportune at present to ship German iron and steel into Poland. Polish agents have been at work here in Berlin also, trying to obtain permits, but without success.

The Deutsche Niles-Werke, which was established near Berlin about 20 years ago for the manufacture of the larger machine tools on American models, has had a chequered career. For some time it has been making seats for merry-go-rounds and compressed air tools. It has recently moved from Ober-Schönweide to Weissensee, a nearer suburb of Berlin, and will continue the manufacture of the articles mentioned on an enlarged scale.

German Imports of American Plates

The "Amstea" company here informs your correspondent that it has now imported a total of 16,000 tons of American ship plates for German yards. Its latest sales were at $85, as against $115 for the first. But the prospects for the continuance of this business are not regarded as very bright at just this moment, though there are 28 ocean steamers now building at German yards and 14 more contracted for. A director of the company recently returned from the United States with orders for 30,000,000 marks' worth of German hardware and mixed goods.

BRITISH 1920 STEEL EXPORTS

December Exports Lowest and Imports Highest for Year—Year's Showing Poor

British steel exports in December, last year, excluding iron ore and including scrap, were the lowest for any month in the year. The total was 191,057 gross tons, as against 237,672 tons the preceding month and 235,106 tons in December, 1919. The exports and imports for the year are given in the following table in gross tons:

	Exports	Imports
January	261,248	79,024
February	231,065	71,997
March	295,716	72,491
April	274,337	71,161
May	332,869	83,431
June	287,655	131,476
July	393,016	142,428
August	276,083	92,628
September	256,280	173,838
October	277,183	188,875
November	238,896	158,940
December	191,057	204,432

The December figures bring the total for 1920 to 3,298,578 tons or 274,881 tons per month, which contrast with 138,519 tons per month in 1919 and 420,757 tons per month in 1913.

Imports in December were 204,432 tons, or the heaviest for the year, making the total 1,544,228 tons, or 128,685 tons per month, as against 50,801 tons per month in 1919 and 195,264 tons per month in 1913. Expressed in a table the exports and imports of steel and iron for 1920, 1919 and 1913 compare as follows:

	Exports	Imports
October, 1919	202,121	88,349
November, 1919	205,263	73,877
December, 1919	235,106	58,882
October, 1920	277,183	188,875
November, 1920	238,896	158,940
December, 1920	191,057	204,432
Average per month, 1919	188,519	50,801
Average per month, 1920	274,881	128,685
Average per month, 1913	420,757	195,264

The trend in some of the principal exports is shown by the following table:

	1920	1919	1913
Steel bars	363,864	249,585	251,059
Hoops and strips	56,521	47,716	45,708
Plates	198,851	238,570	133,949
Black sheets	138,100	133,297	68,152
Wire, all kinds	33,529	18,052	33,397
Sheets:			
Galvanized	410,932	185,939	762,075
Tin plate	353,017	289,462	494,497
Black plate	36,311	32,511	71,775
Black sheets	138,100	133,297	68,152

In most products December exports fell off from those of December, 1919. In sheets, as above, 1920 exports were larger than 1919, but much less than in 1913, while in steel bars, plates, wire, hoops and strips, black sheets (plates), tires and axles, and cables and ropes, etc., 1920 outgo was greater than in 1919 or 1913.

Pig iron imports in December were 34,382 tons, against 15,019 tons in December, 1919. For the year 1920 total pig iron imports were 214,309 tons, against 159,772 tons in 1919. Exports of pig iron in December were 15,549 tons, against 39,635 tons in December, 1919. For 1920 pig iron exports were 462,069 tons, as compared with 258,336 tons in 1919.

Iron ore imports in 1920 were 6,500,911 tons, against 5,200,696 tons in 1919.

Manganese ore imports were 47,345 tons in December, bringing the 1920 total to 452,613 tons, against 264,800 tons for 1919. The 1913 imports were 50,098 tons per month, while those for 1919 were 22,150 tons per month, with the 1920 rate as 37,718 tons per month.

Annual Convention of Canadian Founders

The third annual convention of the Canadian Founders' Association, of which Melville P. White, Toronto, is president, was held on Jan. 12, at Toronto. Resolutions covering the inclusion of the metal trades with the founders were passed unanimously, and steps will be taken at once to obtain the necessary legal changes in the charter, constitution and by-laws. There was marked enthusiasm at the meeting, and addresses were delivered by President Newton, of the National Metal Trades Association; H. D. Sayre, secretary, and the commissioner of the National Founders Association, A. E. McClintock. The plan of operation and policies of the Canadian Association will be practically identical with those of the American association and the National Metal Trades Association.

A new publication of the Bureau of Standards, Scientific Paper No. 404, "The Magnetic Reluctivity Relationship as Related to Certain Structures of a Eutectoid Carbon Steel" states that the magnetic reluctivity relationship permits a study of the structure of a eutectoid carbon steel. This has been done for various heat treatments, viz.: when quenched from 800 deg. C in water and in oil and when drawn back to successively higher temperatures. In the range between the quenched condition and the drawing temperature, 230 deg. C, the material which is in a martensitic condition appears to be magnetically non- homogeneous as shown by a change of slope of the reluctivity line. This may be due to stresses in the material. Between the drawing temperatures 230 and 470 deg. C. the material which is troostitic in structure is homogeneous while beyond 470 deg. C there again appears a distinct bend in the reluctivity line indicating the presence of two magnetically different constituents.

Carriers serving the tinplate producing interests in the Mahoning and Shenango Valleys are preparing to move a heavy tonnage to the salmon canneries of Washington, Oregon and Alaska and the fruit packers of California in 1921. Salmon packing concerns of the Pacific northwest begin to buy tin plate about this season of the year and this seasonal requirement is commencing to assert itself. A larger demand from the canning industry in the East is also anticipated.

A price chart in colors of the fluctuations by days in 1920 of copper, tin, spelter and lead has been issued by the *Metal Bulletin*, 7 East India Avenue, Leadenhall Street, London, E. C. 3, England. The chart is 29 in. long and 17 in. high.

REDUCED PRODUCTION

Carnegie Steel Co. Curtails Slightly at Youngstown Finishing Mills

YOUNGSTOWN, OHIO, Feb. 8.—While iron and steel production probably reached the lowest point this week since the stagnation period set in, nevertheless the leading makers profess to sense a turn for the better. Buyers are evidently still uncertain that prices have reached a stable level. Carnegie Steel Co. plants in this district are beginning to show evidences of weaker operating schedules for the first time. Hitherto, with the exception of bar mills, Carnegie company production has been maintained between 85 and 90 per cent of normal. Decline in pipe tonnage is responsible for the Youngstown Sheet & Tube Co. reducing the number of its active blast furnaces to two out of six. A broker's inquiry for 10,000 tons of plates for delivery throughout the year provoked considerable interest this week, though some producers have been proceeding cautiously in making future quotations because of uncertainty as to market conditions. The sheet market still lacks signs of permanent improvement, in spite of the lifting of suspensions against material produced some time ago, principally for automobile and metal furniture interests.

There is significance in the action of the Carnegie Steel Co. in reducing its operations in finishing mills, open-hearth plant and Bessemer department to 11 turns from 12 per week, thus indicating the decline in business of the leading interest. But 12 of the 25 blast furnaces in the Mahoning Valley are pouring, six of the active stacks being operated by independent steel-making interests. But 16 of the 51 independent open hearth furnaces are charged, while the total of active steel-making units, including those of the Carnegie company, is less than 30.

With but 18 sheet mills active this week out of 105, the operating percentage is less than 10, the producing mills being divided between the Brier Hill Steel Co. and the Trumbull Steel Co. Sheet mill departments of the Youngstown Sheet & Tube Co., Sharon Steel Hoop Co., Republic Iron & Steel Co., Falcon Steel Co., Newton Steel Co. and Mahoning Valley Steel Co. are inactive.

The Trumbull Steel Co.'s operation declined this week about one-third in the finishing departments.

What buying there is is for miscellaneous requirements and emanates from canneries, barrel and metal container makers, stamping interests, stove manufacturers and fabricating interests. In practically all cases it is for small tonnages and spot delivery.

In the main prices are holding to the Steel Corporation base, but an impression has become current that one independent interest is cutting on sheets and plates by reason of the fact that freight charges on eastbound tonnage have been absorbed between Youngstown and Pittsburgh. This brings the new price below the Pittsburgh base in some cases.

On the eve of his departure for Florida, President James A. Campbell of the Sheet & Tube Company stated his belief that people are not going to buy until they are fully satisfied that a readjustment in wages has been made which brings down costs to a basis which satisfies them. Mr. Campbell is inclined to feel that any improvement in the general steel market will be gradual.

Fabricating interests report there is unquestionably a healthier tone to the market, probably due to the placing of business for projected construction work. One company states its orders for metal sash and reinforcing material have shown a nice gain this month.

Owing to their indisposition to stock output in face of recently prevailing costs, producer's stocks are at a low point. When demand for steel does revive in volume, it is pointed out, there is likely to be a rush for material that cannot be satisfied because of the low stocks generally held by makers and jobbers. Valley makers declare the important steel purchasing groups, such as the railroads, agricultural implement makers, automobile producers and construction interests have large unsatisfied needs. Foreign demand, too, now shut off because of the unfavorable exchange situation, is likely to assert itself as exchange drifts back to normal.

The stock list of plain and corrugated galvanized sheets circulated through the district recently and offered at 5.40c. and 5.45c., against the Steel Corporation base of 5.70c., included only second-class material, ordinarily selling at 80 per cent of firsts. One producing interest states that an inquiry for 15 carloads of galvanized sheets on the basis of the prices quoted found the dealer unable to supply a single ton.

PRICES TOO HIGH

So Says Comptroller Williams—Also Discusses Readjustment of Wages

WASHINGTON, Feb. 8.—Made public yesterday, the annual report of Comptroller of the Currency John Skelton Williams, for the year ending Oct. 31, 1920, contains a vigorous attack on iron and steel and coal interests for maintaining what he calls excessive profits.

After making a general review of the business and financial situation in the United States and abroad, and speaking of the "feverish business excitement accompanying the war," he says: "Some of our business men and heads of great industries became accustomed to enormous profits which they vainly hoped might be perpetuated."

Reference made by the Comptroller to the "insistent and peremptory demand" for iron and steel products the year following the armistice (1919) has occasioned surprise, when it is recalled that demand fell to an extremely low point at that time and was the cause of widespread closing down of plants.

The report estimates that the shrinkage in the past year in the market or salable value of the products of fields, forests, factories, mills and mines, in this country alone, as compared with the high level from which they have descended, amounts to between $12,000,000,000 and $18,000,000,000.

"The precipitate decline which has already been witnessed in so many leading commodities encourages the belief that in most cases we are near the bottom, the fall, in some instances, having been already excessive and abnormal and really not justified by actual conditions," it is declared. It is added that "we need not imagine that we have reached a firm and stable foundation until excessive profits are further deflated; until the private citizen is able to acquire, at the expenditure of $1 of his hard-earned money, something approximating the quantity and quality which that dollar commanded in pre-war times."

Equalization of Wages

The report points out that "one of the chief blessings growing out of the war has been the movement toward equalization and the decided raising of wages of the working people to a fairer and more equitable basis. This is for the permanent betterment of the country. Yet wages have not been altogether equalized; in some cases the advance has been insufficient; in others it has been excessive.

"Many industries will find it impossible to continue the present high wages when competition with foreign countries again begins in earnest, as it will, and when commerce with all parts of the world will have been again speeded up, as it will be presently, through the agency of our enormously developed merchant marine."

It is stated that it will be necessary for the people to work full time and intensely in order to meet foreign competition.

Turning to remedies, the report says that the prices of many basic commodities and leading raw materials have already returned to a prewar basis, while some articles are below the prices of 1914. It now remains, it is declared, for the middleman to adjust his profits to the new prices before the ultimate consumer will receive the benefit of the reduced cost of living.

Occasion is again taken in the next paragraph to

assail a steel company for its alleged attitude toward labor.

Lower Wage or Idleness

"The laboring man will soon be in a position where he must determine whether he prefers a shut-down and idleness to a lower wage, which must take into consideration the lower living charges. Unless manufacturers can turn out their products at prices at which the public will buy and can afford to buy, the mills and factories can not afford to run; but obviously it is better for manufacturers to operate and produce goods at cost or at a very narrow margin of profit rather than close down entirely. The attention of this office was directed some time since to the case of a large steel manufacturer employing many thousands of men who threatened to close his factories and throw his employees out of work unless certain large consumers of steel and iron products would place their orders at prices which would yield him a profit three times as great as the normal or average profit. Such an attitude, of course, is wholly indefensible, and is deserving of the severest public condemnation.

"Even with the help of tariffs intended to prevent foreign-finished products from being imported, if we try to maintain a wage scale which does not square with the revised costs of living, we will be unable to sell our products abroad in competition with those of other countries whose manufacturing powers are well developed and whose wages are much below our own. It is clearly far better for workingmen, as the cost of living declines, to agree to a readjustment of wages on a basis which will permit factories to run and the wheels of industry to revolve, rather than to hold out for wages which it will be impossible for employers to pay when obliged, as they will be, to meet keen competition at home and abroad."

Importance of Hardness of Blast Furnace Coke

Apparatus for Determining Coke Hardness—Effect on Furnace Operation — What Is Good Coke?

BY OWEN R. RICE*

CHANGES in coke hardness affect the working of the blast furnace, for soft coke is an obstacle to proper furnace operation. Soft coke is due to a low hydrogen-oxygen ratio in the coal charged; increasing this ratio increases the hardness of the coke. The best means of determining the hardness of coke is the combined tumbler and ball-mill.

What Is Good Coke?

It is not always appreciated that the correct answer may be such a reliable forecast to the physical condition of the blast furnace, and incidentally its entire operation, that among the ordinary variations in other raw materials and also in operating conditions, it assumes a position of primary significance. Inasmuch as coke forms two-thirds of the total bulk of material charged, this assertion will not seem exaggerated.

Coke is the ideal blast-furnace fuel because it is strong and hard enough to resist the crushing and grinding effects of the furnace burden, and its porosity allows the ready passage of gas upward through the charge, and rapid combustion before the tuyeres. Coke deprived of its strength and with a cell structure physically frail and chemically susceptible to solution by carbon dioxide, has its chief asset eliminated. When the melting zones are approached the fluid cinder trickling toward the hearth will envelop the small pieces of coke and form a sticky mass that will retard the free passage of gas. Blast pressure will then rise, driving will slow up and fragments of coke will lie inert before the tuyeres, rendered practically incombustible by their slaggy envelope. It is believed also that coke *messes* at cast are attributable to quantities of such coke floating unburned in the hearth.

The importance of initial size and the resistance of coke to reduction in size have been recognized, but methods thus far employed to determine the physical nature of coke have not given full satisfaction. The shatter test, now largely employed, usually consists in dropping 2-in. coke[1] four times upon an iron plate from a 6-ft. (1.8 m.) elevation and then screening through certain sizes of mesh, the various sizes thus separated being reported as percentages. This gives an indication of the condition of the coke when it reaches the furnace, having passed through the four major stages of handling: Cars to bins, bins to larry, larry to skip, and skip to bells.

But it must not be supposed that reduction in size ceases when the bells are lowered and the coke passes to the furnaces. It will continue and may even be accelerated throughout the entire passage from stock line to tuyeres. The gases will endeavor to disintegrate the cell structure and the mass of stock will exert a destructive grinding and crushing effect. Therefore, while a shatter test may indicate the extent of size reduction due to handling, it does not show the condition of the coke when it reaches its field of action—the tuyeres. Indeed there is frequent misguidance if the shatter test is depended on to determine fit or unfit—hard or soft—blast furnace coke.

If a shatter test shows high fragmentation, the coke may have a weak, chalky structure that will resist no physical strain and cell walls susceptible to carbon-dioxide solution; or the coke may be glasslike in its brittleness but strong enough to bear the grinding, crushing, and abrasion of the brickwork, limestone, scrap iron, etc., on the way to the tuyeres, maintaining throughout a size that permits it to function properly as a porosity medium and that precludes the likelihood of its being "drowned" in slag. The coke that resists shattering is either the tough, soft variety, which is sure to yield to the abrasive action later on; or it is the strong, hard kind that is not susceptible to any sort of physical attack. The need for a more reliable test is, therefore, quite evident.

Combination Tumbler and Ball Mill Used

The effort to apply a test that more closely follows the treatment of coke in the furnace was stimulated by an article of G. D. Cochrane in which he compares the results of a tumbler test on coke with the operation of a low-pressure furnace. In following his lead, we have used a combination tumbler and ball-mill to determine the hardness of daily coke to three 500-ton furnaces, D, E, and F. The bosh angles of the furnaces are 76, 76, and 73½ deg., respectively. Our apparatus, shown in the illustration, is a 22-in. (56 cm.) steel drum, 18¾ in. in diameter with doors at either end and four 1½-in. angles riveted inside longitudinally. A ¼-hp. motor drives the drums at about 20 r.p.m., the belt passing from the motor gear train over the drum itself. Thirty pounds of dry 1-in. coke about half fills the drum. This sample is tumbled for 1250 revolutions (at 20 r.p.m.) with eleven 1¼-in. (32 mm.) steel balls. The resulting fines are screened through ½-in. mesh, and the remaining portion is weighed and reported as per cent of original. This quantity is termed the coke hardness number.

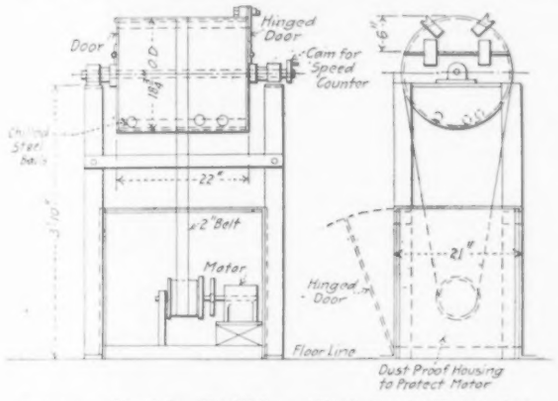
The results of both the tumbler test and the regular shatter test were compared with furnace operation on each subsequent day when the coke tested was passing

*From a paper to be presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers, Feb. 14 to 17, in New York. The author is metallurgical assistant, blast furnace department, Bethlehem Steel Co., Bethlehem, Pa.

[1] By 2-in. coke is meant that portion of the original sample that remains upon a 2-in. mesh.

through the furnace. A period of two months was selected as typical of conditions at that time, being marked by irregularity both of raw materials and in furnace behavior. The hard ores, for example, varied in furnace D from 0 to 100 per cent; in furnace E, from 0 to 20 per cent, and in furnace F were fairly constant at 25 per cent. Tons of stone used per ton pig produced varied widely, the daily averages covering a range of 0.40 to 0.65 ton. The daily averages of scrap charged per ton pig produced ran from 0.08 to 0.35. Coke consumed per ton pig varied as much as 20 per cent on each furnace. The operators fought the wide variations in blast pressures that were constantly threatening, and maintained an average pressure of 17 lb. (7.7 kg.) for the period.

In no way is the physical well being of a furnace



Apparatus Used by Bethlehem Steel Co. to Determine Hardness of Coke

so truthfully indicated as by the blowing conditions. The blast is the pulse of the furnace. Pressure and volume conditions must be considered simultaneously, however, for the furnace may be driving well with pressures up to 18 or 20 lb. due merely to rapid blowing; or it may be hanging and slipping and may require slackening of the engines with but 14 or 15 lb. pressure.

As a matter of daily record, blowing conditions furnish more reliable data on the health of the furnace than either tonnage or rounds charged, both of which depend largely on the nature of the ores used or the size of burden; and both are affected by delays. Moreover, both tonnage and rounds charged, other conditions being constant, are direct consequents of blowing conditions.

The almost unfailing inverse co-ordination, day by day, between the hardness number and the blowing factor was enlightening, particularly in the face of the numerous operating irregularities that marked the test period. It was only between Mar. 5 and 10 when furnace F was carrying 80 per cent of a Mesaba ore that has always caused trouble, that the furnace worked badly in spite of fairly hard coke. Hardness number was between 83 and 84 at the time. Cold stock reaching the hearth, due to heavy slips, led to off casts and large excess of stone was carried to curb the rising sulphur in the pig; this further aggravated high pressure conditions.

It would be absurd to claim that hard coke alone is the remedy for all blast furnace maladies for furnace operation fluctuated when the coke hardness did not. But there was no material change in coke hardness that did not show its effect upon the furnaces. The curves in Fig. 2 are comparable day for day, the coke data having been advanced by one day.

Hard coke means satisfactory furnace operation. Below a hardness number of 81, the furnace showed very seriously the effect of soft coke. Hardness over 85 does not show any particular effect, good or otherwise, upon furnace conditions. Beyond a doubt what must be sought in the furnacing quality of coke is its resistance not only to fragmentation but to abrasion. This characteristic is well indicated by the tumbler test. The use of steel balls in the tumbler is advantageous, as in the furnace the coke is in contact with masses of greater density than itself. The introduction of hot carbon-dioxide gas would add both interest and complexity to further investigations.

While the coal used is the most important factor in determining coke quality, it is difficult to establish a rule governing the quality of coke resulting from different coals, particularly those recognized as coking coals. We have verified the theory of David White that the hydrogen to oxygen ratio on a dry-coal basis affects the resulting coke quality, even substituting for quality the unpretentious term hardness, and though limited to but 20 points variation in the ratio (72 to 92 per cent) as compared with his range of 10 to 290 per cent. Average values for successive 10-day periods show rather steady increase in both hydrogen-oxygen ratio for the coal used, and the hardness of the coke produced:

Period	Average Hardness Number of Coke	Shatter Test Per Cent Through 2 In.	Hydrogen-oxygen Ratio of Coal	Per Cent Ash in Coke
Jan. 25 to Feb. 13	81.65	32.30	73.20	13.47
Feb. 4 to Feb. 13	80.00	35.74	72.00	13.67
Feb. 14 to Feb. 23	82.00	30.96	74.90	13.70
Feb. 24 to Mar. 5	82.39	30.16	81.00	13.64
Mar. 6 to Mar. 15	83.77	29.92	81.60	13.62
Mar. 16 to Mar. 24	83.91	28.30	91.20	13.27

Doctor Cochrane has shown the detrimental effect of ash in coke upon its hardness. The variation of ash in our coke, though small, was sufficient to corroborate Cochrane's claim, and ash content has been considered in this investigation as second among conditions that influence quality.

With fairly uniform coke ash, as the hydrogen-oxygen ratio drops below 74 per cent, the hardness of the resulting coke falls off rapidly; as the ratio exceeds 87 per cent, the effect on coke hardness becomes less and less marked.

That stocking coal affects the hydrogen-oxygen ratio is shown by the following. A 9-mo. stock of Davis coal showed a ratio of 102 per cent, while Davis coal direct from the mine showed a ratio of 125.8 per cent. Some 9-mo. stock of Fulton coal showed a ratio of 55.1 per cent, while Fulton coal direct from the mine showed a ratio of 57.5 per cent. It was the steady increase in the use of fresh coal that brought about the regular rise of the hydrogen-oxygen ratio throughout the test period.

Summary

Coke hardness has an extremely marked effect upon blast furnace health.

The furnace is more immediately sensitive to hardness, which resists wear and tear within the furnace, as shown by the tumbler test, than to toughness, which resists rough handling without the furnace, as shown by the shatter test. The tumbler test is therefore superior for daily control; its adoption is also recommended on grounds of simplicity, reduction of the personal equation, and the saving of labor.

The shatter test is of value as a matter of general record but does not surpass the tumbler test in this respect.

Both tests for coke hardness show reliable co-ordination with the hydrogen-oxygen ratio of the coal used; the higher this ratio, the harder the coke.

February Meeting of New York Steel Treaters

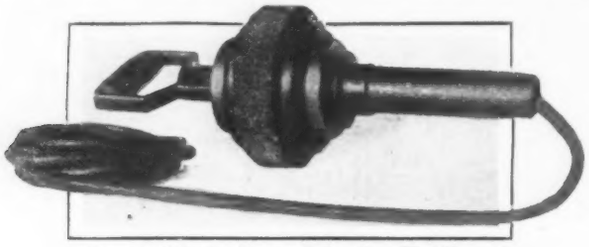
The February meeting of the New York Chapter of the American Society for Steel Treating, which is to be held Tuesday evening, Feb. 15, instead of Wednesday evening, at the Machinery Club, 50 Church Street, New York, will be addressed by Lt. Col. A. E. White, director of engineering research, University of Michigan, Ann Arbor, and president of the national organization of steel treaters, who is making a visit to all the local chapters. The secretary of the society, W. H. Eisenman, Cleveland, will also be present and speak. The meeting will be preceded by a dinner at the Machinery Club at 7 o'clock.

Arthur G. McKee & Co., engineers, Cleveland, Ohio, have been given a contract by the Emporium Iron Co., Emporium, Pa., for a new hearth jacket, cooling plates, new hot blast stove fittings, etc., for its blast furnace.

Hand Grinder

A hand grinder designed primarily for snagging castings, but useful in other applications, is being placed on the market by Forbes & Myers, electrical manufacturers, Worcester, Mass. The shaft is stationary with a handle on each end. The motor is of the 3-phase induction class and the rotating part surrounding the winding consists of a malleable iron core with copper bars welded to copper rings at each end. This is a departure from the usual construction of steel or wrought iron for the core of the rotating part.

With a view to utilizing all the weight to the best possible advantage, both the wheel flanges and the end



The Switch Is Located in the Handle. A motion of the handle toward the motor applies the current

shields are designed to carry magnetic flux, while the end shields are lined with copper to carry the current also. The motor itself is wound for 110 volt, three-phase current. For higher voltages and two or three phases, a small transformer is provided. The latter is mounted on the wall and therefore does not add to the weight carried. The switch is located in the handle.

The wheel is 7 in. by 2 in., with safety flanges of unusual taper. The bearings are a copper graphite composition in an aluminum sleeve and no lubricant is used. The motor gives a maximum output of ¾ hp., and the total weight of the grinder complete is 20 lb.

Algoma Steel Operations

TORONTO, ONT., Feb. 6.—A report on the operations of the subsidiaries of the Lake Superior Corporation, Sault Ste. Marie, Ont., for the six months ending December 31, last, indicate that there has been a substantial increase in output of the various departments over the corresponding period of the previous year. Shipments of iron and steel by the Algoma Steel Corporation for the last period totaled 244,991 tons, as compared with 140,954 tons for the same period of 1919. Production for the last six months of 1920 is as follows: Magpie ore, 83,387 tons; coke, 269,385 tons; pig iron, 233,332 tons, and steel ingots, 190,052 tons. There is a decrease in the output of Magpie ore compared with the previous period because of the fact that the plant was shut down for a time for development work on the sixth level. Unfilled orders for iron and steel on December 31, last, were, approximately, 69,500 tons. The company reports that two contracts have been closed for rails, for delivery during the first half of 1921, and it is stated that the directors expect to book further orders in the near future.

Wheeling Steel Products Co. a Sales Subsidiary

The Wheeling Steel Products Co., recently incorporated under the laws of West Virginia, is a subsidiary of the Wheeling Steel Corporation, acting as exclusive sales agent and sales representative of LaBelle Iron Works, the Whitaker-Glessner Co. and Wheeling Steel & Iron Co., subsidiary producing and operating companies of the Wheeling Steel Corporation. The company, which is composed of the former sales organizations of the Wheeling Steel & Iron Co., LaBelle Iron Works and Whitaker-Glessner Co., will maintain district sales offices in the more prominent trade centers of the country, which offices will be opened as quickly as the organization of the company permits.

The officers of the new company are: President, W. H. Abbott, vice-president Wheeling Steel Corporation; assistant to president, W. B. Higgins, secretary LaBelle Iron Works; vice-presidents, John Duncan, president Wheeling Steel & Iron Co.; H. D. Westfall, vice-president LaBelle Iron Works; W. L. Latta, general manager of sales Whitaker-Glessner Co.; treasurer, W. T. Burt, comptroller Wheeling Steel Corporation; secretary, H. T. Swift, secretary Wheeling Steel & Iron Co. The principal office of the company will be at Wheeling, W. Va. The production of the three companies, for which this company will act as exclusive sales agent, ranges from pig iron to tin plate, its principal products being slabs and billets, skelp, sheet bars, tin plates, standard and oil country pipe, plates, light and heavy sheets, tin and terne plates, forming a combined annual production in excess of 1,000,000 tons of finished materials.

The producing companies all have been long in the steel business. LaBelle Iron Works was established in 1852; the Whitaker Iron Co., to which the Whitaker-Glessner Co. became a successor in 1903, was organized in 1875, while the Wheeling Steel & Iron Co. is the successor of several Wheeling district steel-making companies and was organized in 1890, and some of the constituent companies that it succeeded were organized 40 years before.

Cars for Spanish Railroads

WASHINGTON, Feb. 8.—The Bureau of Foreign and Domestic Commerce, Department of Commerce, is in receipt of specifications and blue prints of railroad cars for Spanish railroads, bids on which will be opened on Feb. 14 in the headquarters of the Council of Public Works, Plaza de las Cortes, No. 4, Madrid. Copies of these specifications are being forwarded to the New York district office, 734 Custom House, where interested parties may see them.

Broaching Open-End Wrenches

Broaching the openings of two open-end wrenches in one operation is shown in the accompanying illustration. These wrenches are 1 in. thick and the broach-

View of the Fixture with the Wrenches Set Up

ing slot when finished is about 2¼ in. The material removed is ⅝ in. (thus roughly about 1 cu. in.), and the time consumed for broaching one set-up (two wrenches) is about 2 min. The machine doing this work is the No. 3 American broaching machine. The fixture shown is made adjustable to accommodate various sizes of wrenches.

Conspiracy of Employers and Labor Union

Walter Drew Denounces What He Calls the Final Infamy in Building Conditions in New York—Revelations of Buffalo Workingmen

WALTER DREW, counsel for the National Erectors' Associaton, and Judge William H. Speer, judge of the United States Circuit Court, Hudson County, N. J., were the guests of the evening at the annual dinner of the Employers' Association of Eastern Massachusetts, at Hotel Somerset, Boston, Friday evening, Jan. 28. Mr. Drew spoke on "Some Phases of the Industrial Situation," and Judge Speer, on the "Arbitrary Domination of Labor by Anyone a National Menace."

To the 500 persons present Mr. Drew first told how labor leaders have sought to teach the employee that to do less work means more employment for more workmen. Under such schooling, he said, the workman has lost his individuality and in many instances has grown to believe in this economic fallacy. He does not know that by decreasing production he is setting in motion forces which tend toward unemployment and decreased wages. Mr. Drew, in quoting from statements by various labor leaders, showed their attitude toward our civic, State and National laws, and the personal rights of non-union individuals. Later, he said in part:

The Important Fact

"The public has been shocked by the recent exposures in the building industry in New York. The important fact is that nothing new has been disclosed, and unless underlying conditions are changed, things will continue in the future as in the past. The Brindell Building Trades Council, with the complete control of all the building trades vested in a small group of delegates who have the power to call strikes at will without a vote of the rank and file, has its duplicates in many large cities. The graft and corruption that naturally follow from such a control have been exposed at different times in many different cities when the grafters became too reckless or too bold. In New York, Sam Parks in 1903 was convicted of the same things with which Brindell is now charged, yet the conditions which made his operations possible still exist. But graft, in the toll it takes from the public, is an insignificant item compared with the other kinds of tribute imposed by closed-shop control.

New York Conspiracies

"In New York, the final infamy is found in conspiracies between groups of employers and closed-shop unions to control the market against outside competition and thus to plunder the public and exploit the worker. In trade after trade, it was shown that the power of a combination of employers to control not only local building work, but even the materials that were used, rested entirely upon the closed shop control of the union in the particular trade, and such outsider as might secure a contract found himself absolutely unable to perform it, because of strikes called by the Brindell Council. But even this condition is not new. Similar combinations were cited as early as 1903 by the commissioner of labor in an exhaustive Government report, and in some of the very trades in which such agreements have been brought to light in the recent investigation. As a matter of fact, such agreements are common and usual in the building industry wherever the closed-shop has become established.

"In the building industry, too, we have the ordinary regular closed-shop evils in intensified form. We have 30 or 40 trades quarreling among themselves over questions of jurisdiction, yet uniting in the use of the sympathetic strike, the boycott and other methods of union warfare against any attempt to question their control in any trade. As to efficiency, it has sunk to the lowest degree. A recent report of the Cleveland Chamber of Commerce says that in that city the building trades workers do only two-thirds of the work done before the war. Before the war, however, the efficiency of the building tradesmen was far below what a fair normal day's work should be. The bricklayer in some union communities now lays 350 to 400 bricks a day, where before the war he laid 800, and a normal fair day's work would be 1500.

Breaks Away From Federation

"Recently, a local union of steamfitters in Buffalo broke away from the American Federation of Labor, and announced its adoption of the open shop. In a public statement the business agent of the union called attention to the fact that the average steamfitter could erect and connect from four to six radiators in an 8-hr. day, but that in the past they had been limited to erecting and connecting not more than one or one and a half radiators per day—in other words, that union steamfitters in the past had been compelled to limit their output not to exceed one-third or one-fourth of their natural ability.

"The character of the building industry explains why union control has become so strongly established. The building contractor is merely an agent, spending someone's else money. He bids on conditions as he finds them, adds his profit, and the owner pays the bill. Each job is a completed transaction, and the builder does not have to manufacture his product and then send it to outside markets to compete with the product of other localities. He has little incentive, therefore, to engage in a one-sided contest to change conditions. The cost-plus contract has also been a factor, as under it the extra cost entailed by new conditions, even during the progress of the work, is passed on to the owner. Often, too, the builder who has tried to resist some unusually arbitrary, unfair or uneconomic demand receives no support from the owner, but is told to complete his contract on time or suffer its penalties.

Must Be Supported

It is clear, then, that too much cannot be expected from the builders themselves in the matter of reform. Nothing can be expected or asked from them unless they are assured of the full backing and support of the business community and the public. In some States, laws have been passed based upon the theory that the building industry, like the public utility, has an important public interest. If this is not so legally, it is certainly so in a very large degree as a matter of practical fact. It is not merely a matter of rents and housing. Practically everything we use has to be made in buildings, stored in buildings and sold out of buildings to the final consumer. In all the different processes from the raw material to the finished product, building cost enters at each stage as an item in final production cost. That this item, multiplied over and over again, is very much larger than it ought to be under proper conditions is a very serious matter for the consumer. It is time for the public, then, to give more attention to how and under what conditions its agent, the builder, does his work.

"Whatever defects or weaknesses or injustices are incident to the open shop, one fact must be clear, and that is that they are not to be cured or a better order established through the substitution of the closed shop. While the employer is human and is actuated by the same self-interest as is the worker or the labor leader, he has not that power of exploitation and oppression with which he is commonly attributed. He, too, is governed by economic law. He must pay for competency, and efficiency and merit what it is worth, or it will find another market. The very influences which widen the sale of his product and tend to increase his profits also

widen the demand for labor and tend to force him to pay a better wage in order to secure that product. The ultimate demand which fixes the wages of the worker comes from the consumer of goods, and the employer can no more prevent the operation of this law than he can stop water running down hill. In the long run, the worker's interest in dealing with the employer will be more surely safeguarded by the laws and forces that control them both than by any power he can exert through an organization committed to the destructive fallacies of the closed shop."

Judge Speer's Address

Judge Speer said he had nothing against a labor union as such. "But you and I have a fight. It is a fight against the misleadership of unionism that threatens the very foundation of this Government. If this misleadership is allowed to go on, it will change this Government from a representative democracy into an oligarchy or class government." He declared it is the duty of every American citizen who loves his country to get together with every other and stop encouragement of the movement for class government. That movement did not begin in 1916, but in that year the railroad brotherhood representatives sat in the halls of Congress and demanded legislation for railroad employers under a threat of a strike. Judge Speer declared it is our duty to see that we never again have a coerced Government.

Those who fight for the open shop, he said, not only fight for a principle but for the men who belong to unions as well. Three years ago we went to war to save democracy. Democracy to-day is in greater peril than then. He urged employers to join organizations if by so doing they can save their jeopardized business. Organizations mean power. If the business man does not believe it, Judge Speer asked him to go down to Washington single-handed and try to have a bill passed.

Later, he pointed out the utter disregard of unionism for the Constitution of these United States. He declared that "until we have obedience to the law we will have no peace between capital nad labor," and urged that we get ourselves together and say we are going to see that no government within the Government is stronger than the Government itself. Industry can only succeed by square dealings with labor. It is wrong to discriminate against a union man, but if the union tries to make the open shop a closed shop, it is then time for the employer to act. No movement in this can be successful unless founded on justice.

Electric Heating in the Iron Industry

Development of Electric Core Ovens for the Foundry and Experiences with Heat Treating Furnaces

BY WIRT S. SCOTT*

SCIENTIFIC baking of cores is almost an unknown subject in this country and through ignorance has resulted in waste in labor, material and fuel. A visit around the foundries will demonstrate that not one-half of the core baking ovens have thermometers on the ovens to indicate the temperature. Furthermore, very little attention is given to the amount of ventilation required, and those who make a pretense of controlling it, do so on a hit and miss basis.

On the basis that there is one best operating temperature in any heating process, and that there is a definite best rate for heating up any piece of work to that temperature, attention has been turned to the corebaking field as virgin territory.

There has been comparatively little done in electrifying core baking ovens in the past, due primarily to the lack of specific data as to the advantages to be gained by heating core ovens electrically. There was no questioning that it could be done, but there were almost no data showing the effect of baking cores electrically and scientifically.

The Westinghouse Electric & Mfg. Co. undertook the work of investigating the baking of cores electrically, carrying out this research work along lines of investigation made in connection with other baking processes which now have become standards for many industrial plants. The research department was placed in charge of the investigation work, and a core baking oven was purchased and installed in the brass foundry. Tests were run, extending over a period of six months, during which time cores of various mixtures were baked, with varying amounts of ventilation and at different temperatures.

The core baking oven was operated on standard production work, but test pieces were placed in the oven along with the work, at different points. At the end of each bake, the work was thoroughly examined as to its conditions, and the test pieces subjected to crushing load and tensile strength tests.

The conclusion of these tests resulted in very strong recommendations being made by the process and materials department of the Westinghouse company for the adoption of electric heating in their brass foundry, with the result that the electric oven, which was purchased on an experimental order, has been taken over by the works and is now in every-day operation.

The electric oven is a great favorite with the workmen, due to the ease of operation, small amount of attention required and the high grade product turned out. The cores are 100 per cent stronger than those baked in a similar gas oven, are free from carbon deposit and are uniformly baked. The length of time required for baking has also been materially reduced.

The advantages found to actually exist, which were of commercial value in our own works, were:

1.—A core from 100 to 200 per cent stronger than is obtained in a similar gas heated oven.

2.—Cores are uniformly baked, due to the fact that electric heaters may be in the oven at suitable points to give the proper heat distribution. After this arrangement is determined, this condition remains fixed, and is not subject to variation at the will of the operator, as with fuel fired ovens.

3.—Rejected cores eliminated, due to the thorough and uniform baking of the cores. In some foundries the rejects amount to 40 per cent, and a 30 per cent rejection is a common occurrence.

4.—Automatic temperature control. This feature removes the human element to a large extent from the baking operation, and assures the cores being baked at a definite and predetermined temperature.

5.—Ventilation regulated to the desired amount by means of a motor driven exhauster.

Heat Treating Brass

An electric furnace is in operation heat treating approximately 4000 lb. of brass per week for the United States Government, the only type of furnace which can uniformly control the crystallization of brass according to rigid specifications of the United States.

Heat Treating Safety Springs of Shrapnel Fuses

During the war period 3½ million safety springs for shrapnel fuses were heat treated in an electric furnace at a temperature of 1200 deg. Fahr., without a single rejection and without a reheating of any batch. The shrapnel fuse springs were heat treated in brass tubes into which was poured approximately one teaspoonful of water. Conversion of the water into steam prevented oxidation.

Approximately 550 lb. of brass, including container tubes, were heat treated every 20 min. Hand control

*Manager industrial heating section, supply department, Westinghouse Electric & Mfg. Co.

was used, consisting of a transformer having a large number of taps and radial knife switches. The temperature and time of heating was announced by a specially built alarm clock ringing at irregular predetermined periods, such as 1 min., 3 min., 2 min., at which times the operator placed the radial switches in certain predetermined contact positions. With a fuel fired furnace, an exact, predetermined, step by step temperature control is impossible, and it was only by the use of the electric furnace, in which the heating was done on all four sides, bottom, top and sides, that the results as above outlined could be secured.

High Temperature Heat Treating Furnaces

During the past year considerable experimenting has been done and much progress made in the development of a reliable and satisfactory high temperature heat treating furnace, with the result that there are now available electric furnaces for working temperature up to 1800 deg. Fahr., and up to 2000 deg. in some special cases. The following installations made will show some of the results accomplished, and the relative value of this type of furnace.

A 120 kw. furnace has been in operation for over a year heat treating automobile springs. The furnace is operated at 1560 deg. Fahr. Two tests made at different intervals show consumptions of 1520 kw. hr. for 15,000 lb. of springs and 1550 kw. hr. for 16,330 lb. of springs treated. Initial temperature of steel 70 deg. Fahr.; weight of charge, 675 lb.

MARKET PRICES

Methods of Determining Values for Taxation Described by the Government

WASHINGTON, Feb. 8.—Sharp declines in the iron and steel markets that developed during the latter quarter of 1920 will permit manufacturers and consumers to take advantage of amended regulations issued by the Treasury Department covering inventories for the purpose of making income tax returns. Briefly, they provide that inventories may be taken at cost or market value, whichever is lower, at the option of the taxpayer. The fact that, in most cases, the market price at the end of the year was lower than the cost of stocks on hand justifies the assumption that inventories will be based on the market. Whichever basis is adopted, however, must be applied consistently to the entire inventory. A taxpayer may, regardless of his past practice, adopt the basis of "cost or market whichever is lower" for his 1920 inventory, provided a disclosure of the fact and that it represents a change are made in the return. Thereafter changes can be made only after permission is obtained from the Commissioner of Internal Revenue. It is required that inventories be recorded in a legible manner, properly computed and summarized, and preserved as a part of the accounting records of the taxpayer.

Goods taken in the inventory which have been so intermingled that they cannot be identified with specific invoices will be deemed to be the goods most recently purchased.

The Commissioner of Internal Revenue, in giving regulations under date of Dec. 30, 1920, concerning inventories defines the interesting and perplexing question as to what constitutes a market and sets forth a guide for the taxpayer in meeting abnormal conditions in the market and allowances that will be granted.

In this connection, article 1584, regulations 45, as amended by Treasury Department 3047, was amended to read as follows:

Article 1584. Inventories at market.—Under ordinary circumstances, "market" means the current bid price prevailing at the date of the inventory for the particular merchandise purchased in the volume in which ordinarily purchased by the taxpayer. This method of valuation is applicable in the cases (a) of goods purchased and on hand, (b) of basic elements of cost (materials, labor and burden) in goods in process of manufacture, and (c) of finished goods on hand, exclusive, however, of goods on hand or in process of manufacture for delivery upon firm sales contracts at fixed prices entered into before the date of the inventory, which goods must be inventoried at cost. Where no open market quotations are available, the taxpayer must use such evidence of a fair market price at the date or dates nearest the inventory as may be available, such as specific transactions in reasonable volume entered into in good faith, or compensation paid for cancellation of contracts for purchase commitments. Where, owing to abnormal conditions, the taxpayer has regularly sold such merchandise at prices lower than the current bid price as above defined, the inventory may be valued at such prices, and the correctness of such prices will be determined by reference to the actual sales of the taxpayer for a reasonable period before and after the date of the inventory. Prices which vary materially from the actual prices so ascertained will not be accepted as reflecting the market and penalties prescribed for filing false and fraudulent returns may be asserted. Goods in process of manufacture may be valued for purposes of the inventory on the lowest of the following bases: (1) The replacement or reproduction cost prevailing at the date of the inventory; or (2) the proper proportionate part of the actual finished cost; or, under abnormal conditions, (3) the proper proportionate part of the sales price of the finished product, account being taken in all cases of the proportionate part of the total cost of basic elements (materials, labor and burden) represented in such goods in process of manufacture at the stages at which they are found on the date of the inventory. The inventories of taxpayers on whatever basis taken will be subject to investigation by the commissioner, and the taxpayer must satisfy the commissioner of the correctness of the prices adopted. He must be prepared to show both the cost and the market price of each article included in the inventory. It is recognized that in the latter part of 1918, by reason among other things of governmental control not having been relinquished, conditions were abnormal and in many commodities there was no such scale of trading as to establish a free market. In such a case, when a market was established during the succeeding year, a claim may be filed for any loss sustained in accordance with the provisions of Section 214 (a) 12 or Section 234 (a) 14 of the statute.

Interest also has been shown in an important and extended ruling made under date of Dec. 29, Treasury Department 3107, concerning deductions allowed in computing net income in the case of natural deposits. The essence of these provisions is that the owner of mineral deposits, whether freehold or leasehold, shall within the limitations prescribed, secure through an aggregate of annual depletion and depreciation deductions the return of either (a) his capital invested in the property, or (b) the value of his property on the basic date (March 1, 1913), plus subsequent allowable capital addition, but not including land values for purposes other than the extraction of minerals. Operating owners, lessors and lessees, whether corporations or individuals, are entitled to deduct an allowance for depletion and depreciation, but a stockholder in a mining or oil or gas corporation is not allowed such deductions. Among the minerals mentioned in the ruling are ores of the metals, coal, oil, gas, abrasives, barytes, fluorspar, graphite, limestone, magnesite, refractories and silica.

Monthly Conferences of School for Social Research Between Engineers and Economists

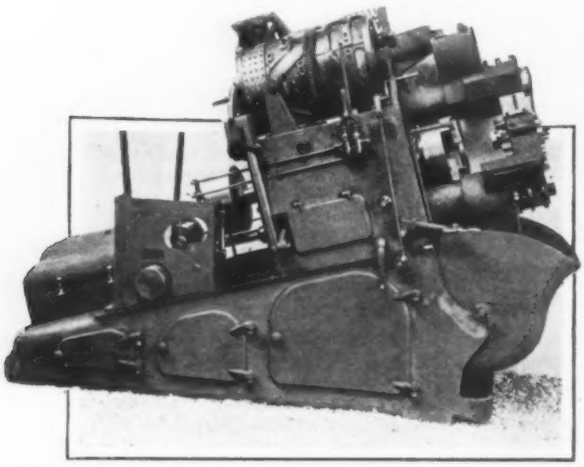
Beginning with Wednesday, Feb. 9, during the coming semester, the New School for Social Research has arranged to hold a conference once every month between engineers and economists on the subject of the function of the engineer in the social structure. These conferences, which will be held at the auditorium of the New School, 469 West Twenty-third Street, New York, will consist of addresses, lectures and open discussions by engineers and economists on the responsibility, opportunity and function of the trained technician and economist in the social structure. The problems of production, labor, waste, industrial morale and efficiency, together with the underlying economics, will be discussed.

The first conference was held Wednesday evening, Feb. 9, the subject being "Production and the Engineer." Dr. Harlow S. Person, of the Taylor Society; Dr. Leo Wolman, Lawrence Frank and O. S. Beyer, Jr., of the New School, spoke.

The Hartness Automatic Lathe

The Jones & Lamson Machine Co. Springfield, Vt., is producing a new automatic lathe designed to handle the boring, turning and facing cuts in pieces under 12 in. in diameter and 6 in. in length. All parts are visible and easily accessible, and being but 2½ ft. wide, one operator can conveniently control two or more machines.

All of the tools are short and "stubby." They are grouped around and in the work, many of them operating simultaneously. A slight motion brings the next group into action. Tool carrying heads of the cat-head type are on the ends of large bars. These bars have their bearings in the main frame that carries the work holding spindle. The main frame provides supports



The Hartness Automatic Lathe Equipped for Machining an Automobile Ring Gear

for the bars out beyond the face of the chuck, and practically in line with the cutting thrusts. This construction provides rigid control of tools in relation to the work carrying spindle. These tool carrying heads oscillate slightly to present various tools. The upper head is designed to give the best control for precision boring or turning and the lower one is primarily for facing. The whole machine has been built around this principle of tool grouping, presenting and control.

As may be seen in the illustration, the frame which carries the work spindle and tool slides also carries the cam drum. This cam drum has four separate cams, two on its cylindrical surface and one face cam on each end. The cylindrical cams provide the length feed motion of the tool slides and the face cams give the cross feed motion to the tool slide. The upper or front cams control the upper slide and the lower or rear cams control the lower slide.

The driving pulley and main clutch, together with the gears and clutches for obtaining the various speeds of the work spindle and cam drum, are all placed in a separate case at the rear of the lathe, which is designed to provide convenience of adjustment and gear changing, and utmost accessibility. The gears are of hardened steel, and lubrication is provided by a spray system. The change gears that are best for the job are selected by the operator. There are two spindle speeds, and two cam drum speeds that are automatically controlled by trips on the cam drum. There are flexible connections between the transmission case and the main frame that carries the work spindle and sliding tool bars so that perfect alignment of these two units is not necessary.

The lathe is designed for belt or motor drive. The motor may be placed in a compartment in the base and is connected by either a belt or silent chain. The space occupied for operation is 4½ x 9 ft., and the weight of the machine net is 7200 lb.

It is to be noted that this machine is not adapted for drilling or tapping, its real field being the machining of simple forgings and castings having cored holes. For work in which the hole has to be made from the solid it is preferable to have these holes rough drilled in a previous operation.

Navy Plate Awards

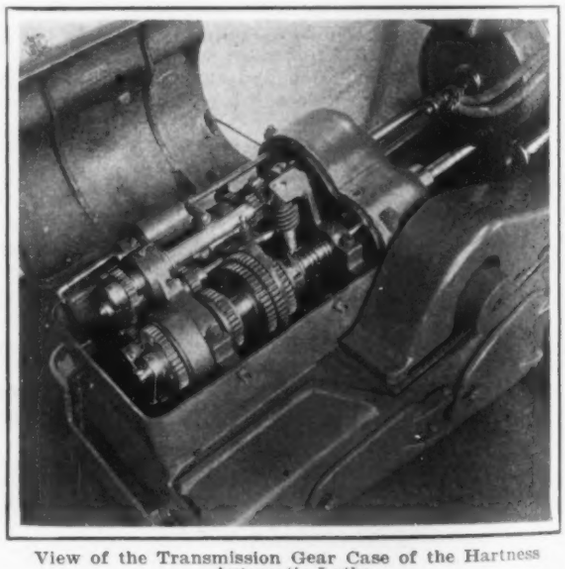
WASHINGTON, Feb. 8.—The Carnegie Steel Co. was awarded contracts last Friday by the Bureau of Supplies and Accounts for plate and shape tonnage required for two battle cruisers to be built at the Philadelphia Navy Yard. This business involves 3150 tons of plates and 1900 tons of shapes. The Carnegie prices, like those of other bidders on this tonnage, were on the market base levels of 2.65c, Pittsburgh, for plates, and 2.45c, Pittsburgh, for shapes. The Carnegie company also was awarded the contract for 250 tons of nickel steel plates for the battle cruisers, its price being 8.84c, Pittsburgh.

Bids were opened on Friday by the Bureau for 400 tons of ¼-, ⅜- and ½-in. by 60-in. plates for the Washington Navy Yard. Figures were all based on the 2.65c, Pittsburgh, price, and were submitted by the Carnegie Steel Co., the Cambria Steel Co., the Brier Hill Steel Co., the Alan Wood Iron & Steel Co., the Lukens Steel Co. and the Jones & Laughlin Steel Co.

The Bureau of Ordnance has issued a schedule asking for 2000 tons of carbon steel scrap for stock for the naval ordnance plant at Charlestown, W. Va. The material is to be in the form of boiler plate and punchings, shoveling size, not to exceed 15 in. in width and 30 in. in length and is not to be over 0.04 in sulphur or phosphorus.

Monterey Blast Furnace in Operation

The blast furnace of the Monterey Iron & Steel Co., Monterey, Mexico, after complete relining, was put in blast Jan. 12. Native ores are used exclusively, the product being basic, foundry and special grades. The personnel in charge of operation at the Monterey plant, which was described in THE IRON AGE of Dec. 30, 1920, is as follows: Roberto Gayol, director general; A. G. Hartenstein, general superintendent; F. P. Bassett, superintendent blast furnace and coke plant; Arthur Buehler, superintendent open hearth department; O. P. Thomas, superintendent rolling mills, and Edward W. Welch, superintendent pipe mill.



View of the Transmission Gear Case of the Hartness Automatic Lathe

During the week ended Feb. 5, all of the 24 tin mills of the American Sheet & Tin Plate Co., Gary, Ind., were in operation and running at full capacity. It is reported, however, that the mills may be soon put on a four-day a week basis.

General repairs to the plant of the Duncannon, Pa., plant of the Lebanon Valley Iron & Steel Co. have been completed. It is understood that the finishing mill will start operations about Feb. 15, and the remainder of the plant about March 1.

INQUIRY BEGUN

Federal Trade Commission Starts Investigation of Complaints of Ferromanganese Makers

The Federal Trade Commission on Wednesday, Feb. 2, began a series of hearings in the complaint of the Lavino Furnace Co., Edward E. Marshall, the American Manganese Mfg. Co., Miami Metals Co., Southern Manganese Corporation and the Seaboard Steel & Manganese Corporation, all domestic makers of ferromanganese, who allege that during a certain period in 1919 British makers of ferromanganese, through their American agents, were guilty of violation of the so-called anti-dumping law, approved by Congress on Sept. 8, 1916.

Respondents in the action are the American selling agents, as follows:

Crocker Brothers, New York, representing the Darwen & Mostyn Iron Co., Ltd., Darwen, Lancashire, England.

Rogers, Brown & Co., New York, representing Wigan Iron & Coal Co., Wigan, Lancashire, England, and Bolckow, Vaughn & Co., Ltd., Middlesboro, England.

C. W. Leavitt & Co., New York, representing the Carlton Iron Co., Ltd., London, England.

Frank Samuel, Philadelphia, representing the Linthorpe-Dinsdale Smelting Co., Ltd., Middleton, England.

One other British manufacturer of ferromanganese, the Workington Iron & Steel Co., Ltd., London, England, is represented in this country, but its agent, C. Tennant Sons & Co., New York, is not made a party to the complaint before the Federal Trade Commission.

The act of Sept. 8, 1916, under which the complaint was brought, states "that it shall be unlawful for any person (this includes partnerships, corporations and associations) importing or assisting in importing any articles from any foreign country into the United States, commonly and systematically to import, sell or cause to be imported or sold, such articles within the United States at a price substantially less than the actual market value or wholesale price of such articles, at the time of exportation to the United States, in the principal markets of the country of their production, or of other foreign countries to which they are commonly exported, after adding to such market value or wholesale price, freight, duty and other charges and expenses necessarily incident to the importation and sale thereof in the United States; provided that such act or acts be done with the intent of destroying or injuring an industry in the United States, or of preventing the establishment of an industry in the United States, or of restraining or monopolizing any part of trade or commerce in such articles in the United States."

Motion to Dismiss Complaint

At the New York hearing on Wednesday, Feb. 2, a motion was made by Joseph E. Davies, of counsel for Crocker Brothers, to permit a separate hearing for his clients on the ground that a joint hearing would make it necessary to disclose business secrets to competitors. The motion was denied by Edward Averill, examiner in charge of the hearing for the commission.

Then another motion to dismiss the complaint was made by Raymond N. Beebe, also of counsel for Crocker Brothers, on the ground that the act of Congress in establishing the Federal Trade Commission is unconstitutional for the following reasons: That the act grants judicial power to the commission in violation of Article III, Section I, of the Constitution; that the act is repugnant to the fifth amendment in that it denies due process of law by combining in one body the function of prosecutor and judicial power; also that it is repugnant to the Constitution in that it denies to the respondents a fair judicial trial; further, that the act is void for indefinition and uncertainty in that it makes unlawful uniform methods of competition without defining the illegal act, thus depriving the respondents of due process of law; and that the act seeks to delegate legislative power in violation of Article I of the Constitution and purports to grant power to make unreasonable search and seizure in violation of the fourth amendment. Further arguments for a dismissal of the complaint were that no cause of action is set forth and that the proceeding is not shown to be in the public interest. The counsel for Crocker Brothers denied the jurisdiction of the commission in the matter complained of. There was also objection to the fact that Crocker Brothers are combined with other respondents who are their competitors.

The motion to dismiss was denied, whereupon Major I. E. Lambert of counsel for the commission, called as the first witness George A. Crocker, Jr., of Crocker Brothers, who testified to the length of time his firm has represented the Darwen & Mostyn Iron Co. in the sale of ferromanganese in the United States. He said that the connection began in about 1886.

William Dette, also a partner in Crocker Brothers, put into the record a tabulation of sales made by Crocker Brothers during the period complained of, when the unfair competition is alleged to have occurred. He stated also that at the time sales were made for British agents his firm also sold ferromanganese produced by the Lavino Furnace Co., Edward E. Marshall and the American Manganese Mfg. Co., complainants in the action. Mr. Dette also testified that to the best of his knowledge the American manufacture of ferromanganese for commercial sale began in 1914 or 1915. It was stated that the United States Steel Corporation, however, had been making ferromanganese in this country since about 1898.

John A. Claussen, of Rogers, Brown & Co., stated that his firm made no sales of British ferromanganese during the period complained of. Thereupon the firm's counsel made a motion for dismissal of the complaint on the ground of no cause of action.

Charles T. Robb, of C. W. Leavitt & Co., testified to sales of British ferromanganese in this country in 1919. He stated that he was selling Russian, Indian and Brazilian manganese ores to consumers in this country as far back as 1902.

B. H. O'Connor, freight department of the International Mercantile Marine, testified as to freight rates from England to the United States in 1919, but his testimony was ruled out when it was learned that he had been engaged in that work only a year and a half.

Alleged Threat Made

PHILADELPHIA, Feb. 8.—The statement that a man named John, a member of the British parliament, and president of the Linthorpe-Dinsdale Smelting Co., Middlesboro, England, told him that if Americans attempted to make ferromanganese they would be run out of business was made here at the ferromanganese anti-dumping hearing, last Thursday, by E. J. Lavino, president of the Lavino Furnace Co., Philadelphia. The utterance credited to John has been held by domestic producers of ferromanganese as providing them with strong evidence in connection with the charge that English makers have sought to destroy the industry in this country. It is held that it supports the contention of the Federal Trade Commission, as well, that English alloy was dumped in America with the knowledge of producers abroad that it would injure the industry here. The attitude of domestic producers and the commission, however, is strongly combated by the respondents, or American sellers of the foreign material. The commission has shown sales of ferromanganese by the respondents in 1919, the year involved in the proceeding, and, at the hearing to begin in Washington next Thursday, will attempt to show prices existing in England that year and adduce additional evidence as to the cost of transportation, the rate of exchange and insurance charges.

The commission tried to establish through Mr. Lavino the attitude of English makers, inasmuch as Mr. Lavino testified that he spends about half his time in England and was in that country for six months in 1919, as he had been for the preceding eight or ten years, and is familiar with makers of England. The statement credited to John was said to have been made in 1914. On cross-examination, Mr. Lavino was asked as to costs of manufacture here.

Frank Samuel, Philadelphia, one of the respondents,

who preceded Mr. Lavino, testified as to sales made by his partnership in 1919, and said that the comparative grades of domestic and foreign ferromanganese were about the same. He said he knew that there was an American industry, a matter which he was questioned about, because the commission has to prove that the English makers had attempted to destroy the industry in the United States.

Details as to names of domestic makers of ferromanganese, technical description of the process of manufacture, costs, etc., were recited by Edward Lavino, vice-president of the Lavino Furnace Co. and son of the president. He said that the industry in this country was started seven or eight years ago, and, in referring to costs, pointed out that they varied, depending upon the cost of the manganese ore and other items.

He expressed the opinion that anything under $125 a ton would be below the cost of manufacture in 1919. The commission representatives claim that English makers opened the market in this country that year at $115, seaboard, and got as low as $90.

PREFER GERMAN GOODS

Venezuela and Colombia Do Not Take Kindly to American Products

WASHINGTON, Feb. 8.—Venezuela is suffering from an era of speculation following the armistice, according to Trade Commissioner P. L. Bell of the Latin-American division of Bureau of Foreign and Domestic Commerce, Department of Commerce, who has just returned from an investigation of business conditions in that country. He told THE IRON AGE that the peak of the financial crisis is expected to develop this month and that a number of failures of large houses is predicted as the result of overstocking of merchandise at high prices, overextension of credits through retailers in the interior and the abuse of credit. American exporters, it was stated, should select their customers more carefully than heretofore and should not supply all the merchandise asked for unless it is for immediate use.

No railroad or other transportation improvements are in contemplation other than construction of highway bridges, the 1921 schedule of which calls for the building of 60, running from 12 to 30 meters in length. The Government is the largest buyer of steel. Other trade is confined to steel products used in the construction of buildings and for hardware. All orders are placed through export commission houses in New York, allowing 90 days' sight or day's date. Longer credit terms are held not to be necessary or advisable at the present time.

Germany stood the strongest in point of trade before the war and still has a prominent share in business in Venezuela, but more goods from America, now the strongest of any country, are being used. But the country will resume business with Germany on a greater scale, it was declared, chiefly by reason of the exchange situation.

With respect to hardware, machinery and allied lines, it was stated that both Venezuela and Colombia preferred German goods because German interests studied the markets in detail and gave buyers in those countries cheap, lightweight articles of modern design and pattern, attractively colored and finished in imitation of the best English and American brands but really containing the poorest kind of raw material. These goods were sold at exceptionally low prices, allowing a narrow margin of profit to manufacturers and exporters, and were sold at first-class prices, permitting importers wide margins of profits on long term credits. Credits now have been restricted by banking houses and the situation was described as being dangerous.

It was pointed out that both Venezuela and Colombia are undeveloped countries with limited production and buy comparatively little in the way of iron and steel and related lines.

Plans of Machine Tool Builders' Association

The executive committee of the National Machine Tool Builders' Association held a meeting at its offices in Cincinnati on Feb. 3 and 4, at which plans for the new activities of the association were discussed. Among the most important of these was the establishment of the statistical department for supplying members with information regarding market conditions in the machine tool industry. A chart showing the actual experiences of some 60 members of the association during the past year had been prepared by General Manager E. F. DuBrul, and its possibilities as a guide to the industry in general clearly demonstrated. The idea will be further developed.

C. H. Scovell, of the firm of Scovell, Wellington & Co., cost accountants, Boston, who recently conducted an investigation with the object of establishing a uniform method of cost finding, submitted his report on the conferences held recently in different sections of the country, and made some recommendations which the executive committee took under advisement. The activities of the association in this matter will be continued, and a report made at the next meeting.

Plans were also discussed for the next meeting of the association, which promises to be the most interesting, from the machine tool manufacturer's standpoint, ever held.

February Meeting of Mining Engineers

The regular February meeting in New York of the American Institute of Mining and Metallurgical Engineers will be held next week, Feb. 14 to 17, at the Engineering Societies' Building, 29 West Thirty-ninth Street. The program covering iron and steel is as follows:

Tuesday, Feb. 15, 10 a. m.:

Measurement of Blast-furnace Gas. By D. L. Ward and R. S. Reed.

Importance of Hardness of Blast-furnace Coke. By Owen R. Rice.

Manufacture of Ferromanganese in the Electric Furnace. By Robert M. Keeney and Jay Lonergan.

Electric Furnace in the Iron Foundry. By Richard Moldenke.

2 p. m.:

Nitrogen in Steel and Erosion of Guns. By H. E. Wheeler.

Static and Dynamic Tension Tests on Nickel Steel. By J. J. Thomas and J. H. Nead.

Surface Changes of Carbon Steels Heated in Vacuo. By E. H. Hemingway and G. R. Ensminger.

Chemical Equilibrium between Iron, Carbon and Oxygen. By M. Chikashige and A. Matsubara.

Wednesday, Feb. 16, 10 a. m. and 2 p. m.:

Discussion of a proposed research on the Heat Treatment of Drill Steel, in co-operation with the United States Bureau of Mines, American Society for Steel Treating, and Engineering Division of National Research Council.

Sessions on non-ferrous metallurgy will be held at 2 p. m., Monday, Feb. 14, and 10:30 a. m., Tuesday, Feb. 15.

The regular smoker is scheduled for Monday evening, Feb. 14, and the annual banquet on Wednesday, at 6:45 p. m., at the Waldorf-Astoria Hotel.

More Liberal Compensation Proposed

WASHINGTON, Feb. 8.—The bill of Senator Robinson of Arkansas, liberalizing the war minerals act to stimulate mining of tungsten, chrome, manganese and other minerals, has been reported favorably to the Senate by the committee on mines and mining. A similar measure was introduced by Senator Walsh of Montana for Senator Henderson of Nevada. The measure would permit the War Minerals Commission to compensate those who invested capital and make a sincere effort to produce these products for the Government during the war, regardless of whether they had been personally requested to do so by representatives of the Bureau of Mines. As the law now stands, only those who had been asked to mine these products may be compensated for losses sustained.

Wage Readjustments Proceed Slowly

Sharp Reductions of Sheet Mill Workers' Pay Expected—Troubles in Cleveland and Cincinnati—Record of Pennsylvania Strikes

YOUNGSTOWN, OHIO, Feb. 8.—With black sheets selling at 4.35c. base, the tonnage rate for union operatives working in mills which operate under the sliding scale of the Amalgamated Association of Iron, Steel and Tin Workers, will be sharply reduced for the March-April period, at the bi-monthly settlement in March.

The January-February rate is based on an average selling price of 5.15c. for Nos. 26, 27 and 28 gage black sheets shipped in November and December. This price compares with a card of 5.80c., upon which wages for union sheet mill workers were based in the last two months of 1920.

With current tinplate business being accepted at $7 per base box, a reduction for tin mill employees is likewise inevitable, inasmuch as wages for the past seven consecutive bi-monthly periods have been based upon an average selling price of $7.75. The two examinations are conducted simultaneously between representatives of the Amalgamated Association and the Western Sheet and Tin Plate Manufacturers' Association.

On Feb. 1 the Youngstown Sheet & Tube Co., which operates independently, reduced wages of its tonnage men 10 per cent. Heretofore this company has usually followed the fluctuations in the scale as revealed at the bi-monthly examination of sales sheets of the union mills. Until Feb. 1 the American Sheet & Tin Plate Co. based wage rates for its tonnage workers on a 5.45c. selling price, while the Sheet & Tube company observed a base approximating that effective with Amalgamated mills until the first of the year, adjusted on a 5.80c. card.

Inasmuch as managers of mills operating under the Amalgamated Association agreement complain that labor costs on tonnage now being rolled at the lower prices are unduly high, by reason of the fact that workers are paid on the basis of the higher price, the suggestion that the present agreement, which does not expire until June 30, be amended, is cordially received in manufacturing circles. But in view of the current low operating rate and the fact that tonnage rates are certain to decline during the next two months, it is not considered likely that active steps will be taken to change the existing contract.

It is furthermore unlikely that manufacturers will take the initiative in such a move at this time, in view of the fact that the mills insisted that the Amalgamated Association live up to its contractural obligations during the steel strike in the fall of 1919. It was through the insistence of the mills on this point that the backbone of the strike was broken in certain sections.

It is more likely that manufacturers will wait until the annual conference in June to press proposed changes in base rates or otherwise. Last year concessions were granted sheet mill workers, though the base rates were virtually unchanged, but an increase was granted tin mill workers. A reduction in base rates will likely be urged by manufacturers at the next annual conference, that wages in this branch of the industry, which are the highest of any section, may be made to conform to a larger extent to living conditions.

Labor Policy at Seattle

SEATTLE, WASH., Feb. 4.—While the Seattle unions of metal trades will follow the policy of the American Federation of Labor, which is to resist all wage reductions at the present time, the re-establishment of the Macy scale in shipbuilding and repair plants will be accepted under protest and men permitted to remain at work until the officers of the metal trades of the Federation agree on a policy touching the situation.

The official statement of the Seattle metal trades announcing the plan emphasizes that a distinction is made between plants doing a local business and plants such as ship repair and shipbuilding plants doing business in competition with other Pacific coast cities and that the Macy scale is accepted under protest only in the latter plants. In the plants doing a local business the council holds that wage cuts are not justified at this time, and will uphold resistance to such cuts and back the molders, patternmakers and machinists who were already on strike in such plants.

This city has rapidly been going over to the American, or open shop plan, and the membership of the Associated Industries, which has been the moving factor for the open shop, has a membership of 2300, which includes practically all the employers in the metal trades. Owing to the unemployment it is felt that any strike at this time would be met with quick response in filling all idle jobs at a much less wage than asked by the unions.

Strikes in Pennsylvania Last Year

The textile, metal and building trades suffered most in labor troubles in Pennsylvania last year, according to a report submitted to Commissioner of Labor and Industry, Clifford B. Connelley, by William J. Tracy, chief of the bureau of mediation and arbitration. The number of strikes recorded in 1920 was the greatest in the history of the state, aggregating 575, which caused a wage loss to the workers of $14,514,195. The number of employees affected was 81,947 males and 7041 females. The textile workers led with calling 129 strikes, metal trades next with 88, building 72 and clothing 49. Shorter hours, more wages, improved working conditions, and recognition of union were the causes for striking. Through the efforts of the bureau of mediation, more than 100 strikes were averted, 450 were officially called off by the unions, while 50 cases were pending Jan. 1, 1921.

Greater Efficiency in Detroit

DETROIT, Feb. 8.—In connection with the reopening of Michigan automotive plants with reduced working forces, it is significant that every plant is obtaining larger production in proportion to the number of workers than had been the case for several years. It is estimated that labor efficiency during the last eight or ten months has increased by at least one-third.

Additional Detroit and Michigan companies that have gotten back into production since last week include the Cadillac Motor Car Co., which has opened with 2500 men at work. The Briscoe Motor Corporation, Jackson, Mich., announces a 1921 production schedule calling for 18,000 cars, or three times last year's production. The company has never fallen below a production of 10 cars a day and is now making 35 a day, with 700 men employed. The Paige-Detroit Motor Car Co. is kept from further increasing production by the loss of patterns, which must be recovered or replaced. The Acme Motor Truck Co., Cadillac, Mich., will start production March 1. The Oldsmobile Co., Lansing, Mich., a day or so ago shipped 60 new cars to Chicago. The Reo Motor Car Co., Lansing, has increased its day from four to six hours, and expects soon to get back to an 8-hr. day, with a force of 6000 men.

Units of the Motor Wheel Corporation of Lansing are on part time production now, and as a result activities have recommenced at the Auto Wheel, Gier Pressed Steel and Prudden Wheel plants. The plans of the Briscoe Corporation have stimulated activities at the

Briscoe Body, Auto Body, Barker-Fowler and John Bohnet & Co. plants in Jackson and Lansing.

An order for 250,000 piston rings is reported by the No-Leak Piston Ring Co., Muskegon, Mich. The Motor Specialties Co., Muskegon, reports the receipts of orders for immediate delivery. Muskegon foundries are all receiving orders for railroad equipment and for some automotive work.

The Novo Engine Co., Lansing, maker of gas engines, pumping and hoisting machinery, is working full time with a full force.

Interchurch Commission Asks Government Interference in Steel Industry

WASHINGTON, Feb. 8.—Efforts of the Interchurch World Movement to have Congress enact legislation along the lines it recommended in its so-called steel strike report do not appear to be getting any response. The recent hearing given members of the steel strike commission by the Senate Committee on Education and Labor in connection with the resolution of Senator Walsh of Montana to have the report printed as a public document has not been followed by any action. While it is not known whether the committee will pigeon-hole the resolution, it is believed that, even if it recommended favorable action, the Senate Committee on Printing, to which the matter would have to be referred, would not approve of it in view of growing opposition to publication at Government expense of extraneous material. The commission, however, speaking through Bishop Francis J. McConnell, told the Committee on Education and Labor that it had not asked for the hearing of January 27 for the purpose of having the report printed as a public document, but that it appeared in order to refute statements that W. Z. Foster prepared the report.

The commission has made public a memorial to Congress in which it renews the request for action on its recommendations, heretofore published, urging among other things that the Government set up a commission for the steel industry "in order to initiate free, open conference between those who must always be chiefly responsible for the settlement of the industry's problem—its owners and its workers"—and abolition of the twelve-hour day and seven-day week.

The commission repeats the old claim that another steel strike is imminent unless "conditions are remedied" and is "unwilling to believe that the Government does nothing and leaves the field to a contest of trade unions against manufacturing corporations."

Coke Oven Accidents in 1918 and 1919

The fatality in coke oven accidents in the United States in 1919 amounted to 1.92 per 1000 men employed, compared with 2.06 in 1918, according to Technical Paper 266 of the United States Bureau of Mines. In 1919 there were 53 men killed and 4031 injured; in 1918, 73 killed and 7792 injured. However, there were more men employed in 1918, or 32,389, compared with 28,741 in 1919. The non-fatal injury rate in 1919 was 145.66 per 1000; in 1918, 219.64. The report is based upon returns representing 46,902 beehive ovens and 8545 by-product ovens. In 1919 the average number of days the ovens were operated was 289, or about 22 per cent less than in 1918.

Steel Corporation Pensions

Retired employees of the United States Steel Corporation and its subsidiary companies received in pensions during the year 1920 the sum of $779,766.60, according to the tenth annual report of the United States Steel and Carnegie Pension Fund. This is $46,059.15 more than was disbursed last year, and is the largest sum paid out in any year since the establishment of the fund in 1911. There were 3264 participants, 2940 being on the list at the beginning of 1920, to which 324 were added during the year. Discontinuances because of death or other causes were 295, leaving 2969 as active participants as of Jan. 1, 1921. The total amount disbursed since the establishment of the fund is $5,880,581.60, and starting with $281,457.37 in 1911 it has increased annually, the amounts being: for 1912, $358,780.92; 1913, $422,815.14; 1914, $511,967.90; 1915, $659,389.42; 1916, $711,130.33; 1917, $712,506.65; 1918, $709,059.82; 1919, $733,707.45; and for 1920, $779,766.60. For 10 years the average age of the pensioners has been 65.78 years; the average service 30.41 years and the average payment $22.10 monthly. The beneficiaries make no contributions to the fund. The money is derived from a trust fund of $12,000,000 established by Andrew Carnegie and the United States Steel Corporation.

Labor Conditions in Cleveland

The Acme-Palmers & DeMooy Foundry Co., Cleveland, placed its foundry on an open shop basis under an Americanization plan last week and as a result its employees who are members of the molders' union went on a strike. The plant, which was being operated at a limited capacity, was shut down. The Ferro Machine & Foundry Co., Cleveland, which is operated entirely on piece work, has cut its piece work rates from 20 to 25 per cent. Other Cleveland gray iron foundries still have under consideration the reduction of wages and the adoption of the open shop.

The American Shipbuilding Co., Cleveland, has reduced wages 10c. per hr. for all classes of labor in its Cleveland and other shipyards along the lakes. The company's new scale is 40c. to 50c. per hr. for common labor and minimum rates of 55c. to 75c. for mechanical labor in its machine, boiler and other shops.

Cincinnati Foundries Close

All the foundries in Cincinnati and vicinity employing union molders have been closed down following the failure to get together on a wage agreement to replace the old one which expired on Jan. 31. The employers requested a 20 per cent reduction in wages, extension of the piece work system and elimination of overtime after eight hours work. This the Iron Molders' Union refused to accede to, hence the shutdown. As many of the foundries were running only two days a week, the shutdown will hardly come as a great inconvenience. It is reported that the officers of the Iron Molders' Union, which had been in session in Cincinnati for the past two weeks, had discussed the possibility of operating a foundry of their own, but no definite information has been given out. According to union officials, they are determined to resist any attempts to cut wages in the industry, and will take care of their members while they are unemployed.

Building Conditions in Boston

The Boston Chamber of Commerce study of the building situation in that city has developed the following facts:

That wages of bricklayers have advanced from 42c. per hr. in 1888-1898, to $1 in 1920-1921, while there has been a steady decrease in efficiency of workmen since 1898.

That it costs a man from $100 to $125 to join the union and the man has six weeks to complete payment of this sum. Time extensions can be arranged, however.

That there are 23,000 organized building workmen in Boston, representing 16 per cent of the total organized labor in Boston.

That army orders during the embargoes since the war largely account for the scarcity of building materials.

That building supply houses anticipate an advance in materials as soon as business improves.

That 11 firms of architects in Boston had made plans for $1,760,000 construction in dwelling houses, $6,754,000 in commercial construction, and $27,137,000 in buildings for public institutions, which work is held up because of the present cost of construction.

In the Field of Labor

Effective Feb. 14, wages of employees, both on day and on piecework, and of salaried employees, will be reduced 10 per cent, according to officials of the Fore

River Works, Quincy, Mass., Bethlehem Shipbuilding Corporation, Ltd.

Employees of the Norton Co., Worcester, Mass., grinding machines and wheels who are living in the company's 92 single-family houses in Norton Village, have had their rent reduced from $25 per month to $5 per week, or from $300 to $250 annually.

A readjustment of wages, approximating 10 per cent, in the Worcester, Spencer, Clinton and Palmer, Mass., plants of the Wickwire-Spencer Steel Corporation, took place last week. Curtailment of production and laying off of help has been necessary at several plants of the company.

With the exception of molders, wages of employees are to be reduced at least 15 per cent, according to the managements of the Weir Stove Co. and the Magee Furnace Co., Taunton, Mass., stove manufacturers. The foundry of the latter company until recently operated with eight molders, but they refused to work unless more help were taken on.

During the presentation of a petition at Boston by the Moore Drop Forging Co., Springfield, Mass., for a temporary injunction to restrain certain labor organizations, to which its striking employees belong, from interfering with its business and from picketing, the statement was made by Mr. Fuller, general manager, that a committee of his striking workmen had offered to guarantee a greater production of work per hour if they were allowed to return to work at the old wages. The company availed itself of a stipulation in its agreement with the men to give them notice of a reduction in wages amounting to about 20 per cent. Some of the men signed the new wage scale, but later went on strike with others. Two large motor companies have cancelled a considerable tonnage placed with the Springfield company, and it is doubtful whether it is feasible to take the men back under any conditions.

The January report of the Public Employment Office, Boston, shows a decrease of 51 per cent in the number of orders from employers, as compared with January, 1920, but an increase of 5 per cent as contrasted with December. The demand for help from employers decreased 56 per cent as against January, 1920, but increased 6 per cent as compared with December. Positions reported filled decreased 38 and 3 per cent, respectively. Applicants for employment, taken one day each week, showed an average of 2647, a new high record insofar as the employment office is concerned.

Foremen of industrial plants at Youngstown, Ohio, have formed an association for the purpose of promoting their interests and improving their work. On Feb. 4 they were addressed by C. R. Hook, vice-president American Rolling Mill Co., Middletown, Ohio. He emphasized that the foreman is the "key" man in industrial organizations and that much of the efficiency of a unit depends upon the ability of the foreman and his capacity in handling men. He also explained the large part the foreman can play in Americanization work of a most practical nature.

The Pennsylvania Engineering Works, New Castle, Pa., has informed employees that a wage reduction of 12½ per cent will take effect this month.

A wage reduction of 20 per cent, affecting all employees and effective Feb. 1, is announced by the Ella Furnace Co., West Middlesex, Pa.

One hundred and fifty molders of the Chicago Hardware Foundry Co., North Chicago, Ill., recently went on a strike as a protest against a 20 per cent wage cut.

"Orderly Piling Wipes Out Yard Accidents" is the caption of a photograph appearing in the *National Safety News* of Jan. 31. The explanation follows: "The accompanying photograph shows the orderly method of storing pig iron along track of trolley scale car in the foundry yard of the Universal Winding Co., a machine manufacturer of Providence, R. I. 'No accident has ever occurred in our foundry yard since we adopted this method of piling,' the company writes." Alternate layers are piled at right angles to those immediately above and below.

The Canton Sheet Steel Co., Canton, Ohio, resumed operations Monday, starting up six of its 13 sheet mills. Previous to the resumption, the employees of the sheet mill department voted to accept a reduction of approximately 20 per cent, putting them on the same basis as other independent sheet mills that have reduced wages in the valley and Canton districts.

Wage reductions of 60 cents a day were put into effect by the blast furnace operators in the Ironton district on Jan. 16. Furnaces in the Jackson district, which have a wage agreement governed by the scale paid at Ironton, have also reduced wages similarly.

A strike of molders at the plant of the Columbus Foundry Co., Columbus, Ind., has been settled and the men have returned to work. The strike was called by the International Molders' Union when piece work was substituted in the foundry for daily wages of $7.20. Under the new agreement the old wage scale will prevail for day work and piece work will be done only part of the time.

The J. I. Case Plow Works Co., Racine, Wis., manufacturer of tractors and tractor implements, has resumed operations on a schedule of three days per week, using virtually the normal force alternately. The works have been operating at minimum capacity for about 90 days.

Two departments of the foundry of the car shops of the Pennsylvania Railroad at Altoona, Pa., have gone back to the piecework system of wages, at the request of the employees.

Unusual Furnace Record

Furnace A, one of a group of four similar stacks operated by the Youngstown Sheet & Tube Co. at its Youngstown plant, was blown out on Jan. 27, after a remarkable production record. This furnace, which was blown out to avoid piling its product, was found to be in excellent condition. The lining, which was put into service on March 14, 1915, was apparently good for two years' additional service, an opinion supported by its production of 551 tons on the last day of operation and its record for the previous 30 days.

After being relined in March, 1915, this furnace was in operation 2087 out of a possible 2146 days, 59 days being lost on account of fuel shortage and other conditions. It produced during this period 1,153,011 tons of iron—an average per day of operation of 552.5 tons. Its best production for 24 hours was made on Dec. 26, 1915, being 721 tons. The best monthly average was made in March, 1919, when it produced 634 tons per day.

The furnace is rated at 500 tons per day. It is 88 ft. high, 22 ft. at the bosh, 16 ft. at the hearth and 16½ ft. at the stock line.

Considerable regret was felt over the necessity for blowing out the stack at this time, as it seemed likely to make a world's record for production on one lining had it been possible to continue operation until this lining was worn out.

Gary Rail Mill Exceeds Record

The rail mill at the Indiana Steel Co., Gary, Ill., broke its rolling record on Jan. 29, when the output was 2275 tons. The previous record was 2052 tons.

The Dantzler Foundry & Machine Works, Gulfport, Miss., is rapidly increasing its force of workmen as it is completing its plans for making equipment. The company will make a large cable way excavator, a locomotive-coaling or ship-loading apparatus, a road-grading and maintenance machine and a contractor's hoist. When four sample machines are completed, which will be soon, a force of 75 men for both night and day shifts will be employed. For the present some of the machines will be made at Birmingham, Ala. Eventually a factory covering 20 to 25 acres will be built, to employ 1000 men, according to present plans. The piece-work plan will be adopted in both the foundry and machine shop. About six months ago W. Graham, general manager, went to Gulfport, where there is plenty of capital and manufacturing facilities, cheap raw material, good labor conditions and export facilities.

Large Iron and Steel Exports Last Year

Shipments to Foreign Lands Exceeded Only Once in History of Industry—Heavy Movement of Plates—Imports of Scrap Exceed Those of Any Other Product

WASHINTGON, Feb. 8.—Exports and imports of iron and steel products and exports of machinery showed increases in the calendar year 1920 over 1919, according to official compilations completed by the Bureau of Foreign and Domestic Commerce, Department of Commerce. The shipments to foreign lands of iron and steel during the year just ended were exceeded only once in value in the history of the industry, in 1917, when tonnage went abroad in great volume for purposes of war. Exports, from the point of value in 1920, consequently, were the record so far as peace-time deliveries were concerned, but amounted to only about 10 per cent of the steelmaking capacity of the country. Exports of machinery established a record over any previous year.

Total exports of iron and steel for 1920 were valued at $1,112,773,886, or a little more than 13 per cent of the entire foreign business, valued at $8,228,759,748. They compare with $969,273,732 in 1919, $1,035,299.567 in 1918 and $1,241,960,102 in 1917. The total exports of iron and steel products listed in THE IRON AGE tables, which include all of the major items reported on a tonnage basis, and the other important commodities, were 4,820,016 gross tons for 1920, as compared with 4,386,201 for the year 1919, 5,338,037 in 1918, and 6,227,737 in 1917, the record year as to both quantity and value.

Exports of Iron and Steel

	Gross Tons			
	December		Calendar Year	
	1919	1920	1919	1920
Ferromanganese	3	551	2,999	3,454
Ferrosilicon	146	29	4,934	632
All other pig iron	14,463	9,475	313,319	212,742
Scrap	3,472	12,805	26,775	219,250
Bar iron	1,776	5,823	60,546	46,648
Wire rods	6,868	4,785	118,009	116,775
Steel bars	30,258	63,791	554,211	624,587
Billets, ingots, blooms, n.e.s.	21,538	3,415	258,424	216,873
Bolts and nuts	2,346	4,334	30,811	38,945
Hoops and bands	3,708	4,415	50,835	53,453
Horseshoes	268	92	3,384	1,830
Cut nails	84	591	2,920	3,858
Wire nails	3,186	12,137	89,778	93,178
All other nails, including tacks	798	1,435	16,229	12,432
Cast-iron pipe and fittings	4,267	12,519	39,455	68,863
Welded pipe and fittings	7,991	39,192	236,080	284,727
Radiators and cast-iron house-heating boilers	650	508	4,657	7,333
Railroad spikes	920	1,409	20,306	12,138
Steel rails	34,149	52,986	652,449	594,634
Galvanized sheets and plates	6,011	11,248	101,638	108,368
All other sheets and plates	1,816	1,864	39,894	32,158
Steel plates	46,746	114,554	710,012	920,958
Steel sheets	8,148	17,730	177,467	169,244
Ship plates, punched and shaped	2,300	2,132	14,187	42,829
Structural iron and steel	15,610	63,496	360,787	493,655
Tin and terne plates	15,375	20,955	204,524	226,410
Barb wire	10,157	13,391	101,450	134,174
All other wire	8,002	23,103	190,111	190,968

Imports of Iron and Steel

	Gross Tons			
	December		Calendar Year	
	1919	1920	1919	1920
Ferromanganese	3,427	5,424	33,022	59,254
Ferrosilicon	1,822	317	10,455	13,909
All other pig iron	7,528	1,861	55,198	123,201
Scrap, including tin	20,218	4,132	177,293	140,645
Bar iron	366	305	1,940	4,987
Structural iron and steel	196	206	1,154	1,687
Steel billets without alloys	2,878	....	8,230	9,299
All other steel billets	1,637	859	8,038	16,723
Steel rails	1,272	1,623	17,008	45,684
Sheets and plates	90	98	1,098	1,792
Tin and terne plates	17	55	241	400
Wire rods	107	241	342	5,847
Total	39,797	18,723	322,261	417,581
Manganese ore and oxide	36,376	59,248	333,344	601,437

Total imports of iron and steel for 1920 were valued at $50,352,888 and amounted to 417,581 tons in the leading iron and steel articles, as compared with 322,261 tons in 1919 and 179,702 in 1918. Exports of machinery for the year 1920 were valued at $462,934,652, a large increase over preceding years, 1919 having represented a total of $379,178,652, and 1918, $282,974,797.

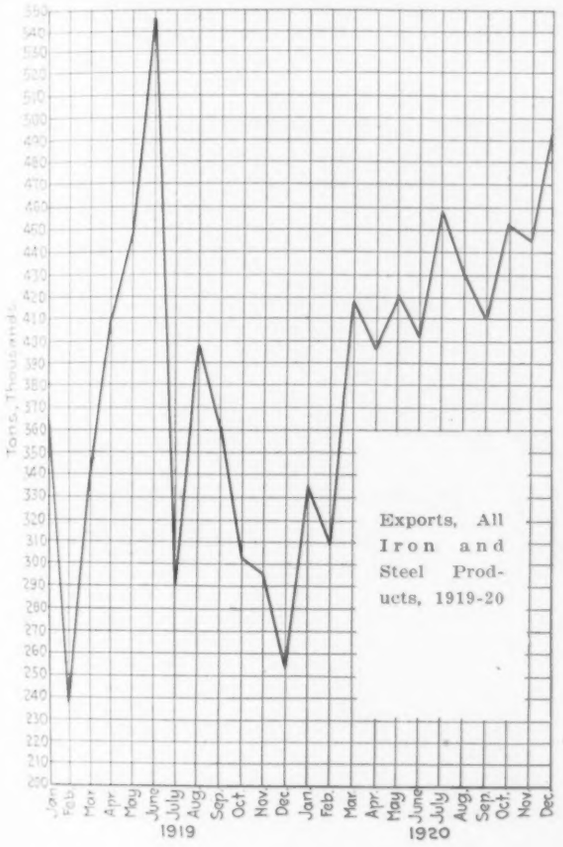
For December of last year exports of iron and steel products totaled 498,765 tons, valued at $123,178,579, a heavy increase over the same month of 1919, when they amounted to 254,676 tons, valued at $60,399,425, and 357,703 tons in December, 1918. The December figures also exceeded those of November, the latter having been 434,297 tons, valued at $104,827,626, a rather surprising fact, in view of the lower operations of the industry and the apparent falling off in foreign demand, although it perhaps is explained by the fact that bookings had been made some time previously and did not reach ports of shipment until the last month of the year. Imports for December totaled only 18,723 tons, valued at $3,120,156, as compared with 50,992 tons valued at $3,854,950 in November. Imports of manganese ore and oxide for the calendar year 1920 totaled 601,437 tons, and for December 59,248 tons, comparing with 333,344 tons for 1919 and 36,376 for December of that year. Those of November, 1920, aggregated 74,477.

Exports, January, 1919, to December, 1920, Inclusive

	Gross Tons		
	All Iron and Steel	Pig Iron	Semi-finished Material
January, 1919	360,456	35,793	11,594
February	234,793	20,178	10,407
March	344,506	22,054	8,176
April	408,204	16,300	11,488
May	447,050	32,233	20,771
June	544,580	39,540	46,016
July	287,823	38,373	21,318
August	396,743	36,071	36,162
September	363,505	18,991	37,513
October	302,456	14,108	20,713
November	295,045	21,429	13,211
December	254,676	14,612	21,538
Total	4,239,837	309,682	258,907
January, 1920	333,601	18,468	19,937
February	308,185	15,739	22,693
March	417,216	22,740	30,444
April	395,120	14,608	19,032
May	420,359	13,032	16,370
June	402,707	17,075	29,811
July	458,866	29,647	17,243
August	431,484	22,645	20,920
September	409,200	22,724	18,113
October	452,015	17,296	11,853
November	434,297	13,929	7,042
December	498,765	10,055	3,415
Total	4,961,851	217,958	216,873

It is interesting to observe that steel plates were shipped in greater quantities both for the calendar year 1920 and the month of December than any other tonnage, the totals being 920,958 and 114,554, respectively. As was the case in a number of other leading products, Canada was the greatest buyer of plates, taking about 25 per cent or 203,362 tons of the 1920 exports. Plate exports in 1919 totaled 710,012 tons, and in November, 1920, 79,424. Steel bars constituted the next to largest tonnage exported, being 624,587 for last year, as against 554,211 for 1919, and 63,791 tons in December as compared with 56,872 in November. Steel rail exports in 1920, totaling 594,634 tons, showed a decline as compared with the preceding year, when they amounted to 652,449 tons. In December they were 52,986 tons, as compared with 34,149 in December, 1919, and 67,708 tons in November of last year. Blast furnace products also showed a decline in exports in 1920 as compared with 1919. For the former year they were

3454 of ferromanganese, 632 of ferrosilicon and 212,742 of pig iron, comparing with 2999 for ferromanganese, 4934 for ferrosilicon and 9475 for pig iron in 1919. Blast furnace product exports in December totaled 10,055 tons, of which 9475 tons were pig iron, comparing with 13,929 tons in November, of which 13,167 tons were pig iron. Of the total exports of 216,873 tons of ingots, blooms and billets for last year, 132,643 tons went to the United Kingdom. This total compares with 258,424 tons in 1919. The December exports were 3415, as compared with 21,538 in December, 1919, and 7042 tons last November. Of the 284,727 tons of welded pipe and fittings exported in 1920, Mexico took 97,390 tons. The exports of this line in 1919 totaled 236,080 tons



and in December 39,192, as compared with 25,317 tons in November. Of the 169,244 tons of sheets exported last year, 62,920 tons went to Canada and 50,368 to Japan. The exports of sheets in 1919 amounted to 177,467 tons, and in December to 17,730 tons, as compared with 16,064 in November of last year and 8148 in December, 1919. Of the 108,368 tons of galvanized sheets and plates exported in 1920, 25,073 tons went to Canada and 12,500 tons to Cuba. The 1919 exports of these products were 101,638, while those of November of last year and of December, 1919, were 8137 and 6011 tons, respectively. Structural iron and steel exports totaled 493,655 tons in 1920, of which 137,930 tons went to Canada and 89,838 tons were taken by Japan. Structural exports in 1919 were 360,787 tons, and in December and November of last year were 63,496 tons and 42,839 tons, respectively, while they were 22,939 tons in December, 1919. Of the 226,410 tons of tin and terne plates exported in 1920, Canada took 63,090 tons and Japan 49,755. Similar exports for 1919 totaled 204,524 tons, for December of last year 20,955 tons for November, 1920, 15,424, and for December, 1919, 15,375.

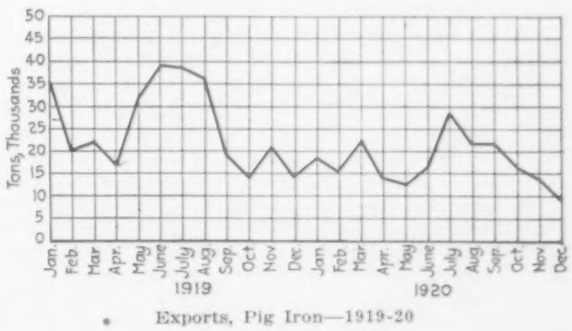
Scrap was imported in greater quantity than any other item in 1920, with 140,645 tons coming to the United States, as compared with 177,293 tons in 1919, when it also represented the greatest tonnage of importation. Blast furnace products when combined, however, made up the greatest tonnage imported, incoming pig iron shipments in 1920 being 123,201 tons, while ferromanganese and ferrosilicon importations totaled 59,254 tons and 13,909 tons, respectively. Imports of pig iron in 1919 totaled 55,198 tons, of ferromanganese

Exports of Machinery

	December		Calendar Year	
	1919	1920	1919	1920
Adding machines	$220,549	$769,160	$3,863,217	$6,790,407
Air-compressing machinery	400,938	661,711	3,761,290	5,490,397
Brewers' machinery	57,368	67,630	213,590	522,194
Cash registers	302,046	514,278	4,080,588	5,472,620
Parts of	30,702	28,921	294,938	469,450
Concrete mixers	29,392	152,347	246,631	967,440
Cotton gins	3,632	31,186	295,746	433,589
Cream separators	40,191	74,106	1,093,821	1,106,298
Elevators and elevator machinery	125,898	172,723	2,601,543	1,517,537
Electric locomotives	7,986	18,850	835,978	880,430
Gas engines, stationary	65,702	58,219	692,584	817,925
Gasoline engines	2,128,358	2,893,639	32,801,867	35,932,682
Kerosene engines	249,602	.....	7,824,599	.....
Steam engines	3,177,912	5,184,290	32,227,070	57,639,537
All other engines	204,851	436,585	3,406,891	4,431,019
Boilers	400,422	905,399	6,361,229	8,006,288
Boiler tubes	281,416	901,975	7,916,665	6,077,930
All other parts of engines	1,106,915	2,041,568	23,319,190	22,142,104
Excavating machinery	138,103	182,674	1,165,763	2,042,727
Milling machinery	106,964	215,681	2,375,802	1,886,201
Laundry machinery, power	51,262	60,486	796,053	1,136,770
All other	47,720	176,276	399,736	903,978
Lawn mowers	23,287	96,685	478,583	455,921
Lathes	607,732	629,594	10,136,877	7,575,123
Other machine tools	837,217	1,264,939	12,490,600	13,961,243
Sharpening and grinding machines	244,863	314,293	5,494,060	3,945,490
All other metal working machinery	1,715,868	1,557,881	30,386,405	18,830,377
Meters, gas and water	53,697	52,480	763,691	705,037
Mining machinery, oil well	348,180	1,113,461	3,613,972	6,229,284
All other	495,761	1,037,244	9,265,319	8,990,992
Paper-mill machinery	346,133	394,854	3,958,873	3,048,697
Printing presses	500,144	1,092,571	3,827,038	9,253,711
Pumps and pumping machinery	804,968	2,089,030	9,067,458	13,684,468
Refrigerating machinery	119,045	468,711	2,141,110	3,819,062
Road-making machinery	65,097	143,594	987,912	1,327,752
Sewing machines	1,255,177	1,447,937	12,774,124	15,581,843
Shoe machinery	292,980	378,397	2,839,828	2,653,039
Sugar-mill machinery	1,326,912	4,054,741	13,805,940	22,787,977
Textile machinery	1,053,273	2,778,340	14,986,369	20,919,614
Typesetting machines	292,158	541,696	3,932,544	4,958,757
Typewriting machines	1,627,716	2,392,194	17,391,118	25,041,809
Windmills	113,966	332,366	1,091,543	2,256,750
Wood-working machinery, saw mill	56,149	177,387	1,141,248	1,220,028
All other	222,552	497,789	2,603,407	3,754,823
All other machinery and parts of	5,707,062	11,187,597	73,425,842	96,657,650
Total	$27,252,866	$50,321,644	$379,178,652	$462,934,073

33,022 tons and of ferrosilicon 10,455 tons. Pig iron imports in December of last year were 1861 tons, while those of ferromanganese were 5424 tons and ferrosilicon 317 tons. In November they were 13,167 tons, 760 tons and 2 tons, respectively.

The United Kingdom, France and Japan were large buyers of machinery in 1920. Of the total value of $44,312,233 of metal-working machinery exported in 1920, the United Kingdom took $11,135,567, France $7,595,733 and Japan $4,250,583. The biggest item of exports in machinery for 1920 was steam engines, with a total value of $57,639,537, compared with $32,801,867 in 1919. The December total was $5,184,290 as compared with $3,319,546 in November and $3,177,912 in



Exports, Pig Iron—1919-20

December, 1919. Sugar mill machinery to the value of $22,787,977 was exported last year, as compared with $13,805,940 in 1919. For December the value was $4,054,741, as compared with $4,437,492 in November. Textile machinery exports for last year totaled $20,919,614; for December, $2,778,340, for November, $1,681,168, and for 1919, $14,986,369. Typewriting machines to the value of $25,041,809 were exported in 1920, as compared with 417,391,118 in 1919. The totals for December and November of last year were $2,392,194 and $1,757,750, respectively.

DRYING 100-TON LADLES

Swinging Type Burner Uses Preheated Tar Without Artificial Air Supply

BY ALAN E. DYNAN*

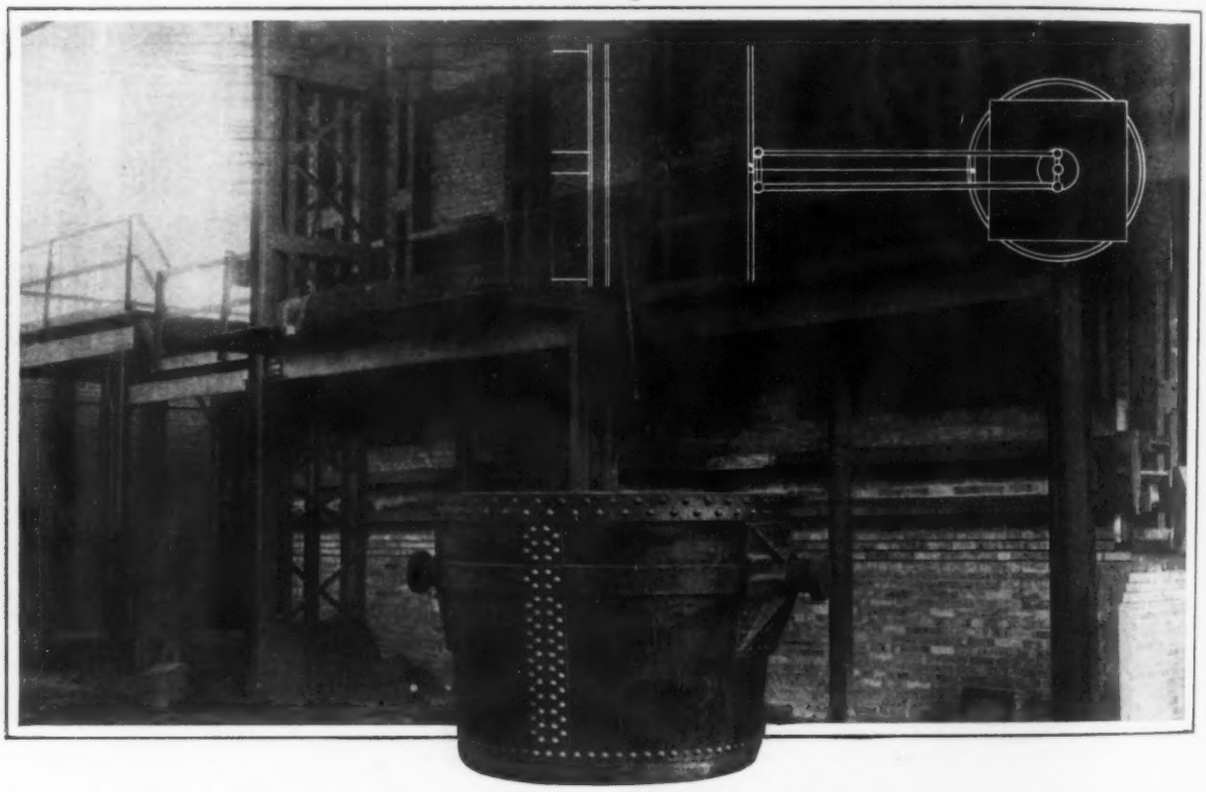
The fast diminishing supply of natural gas in western Pennsylvania, Ohio and West Virginia has so affected many steel mills in that region that they are now operating intermittently. As there is no prospect of future improvement, manufacturers are turning to oil to replace the gas, realizing that when correctly applied it has the advantages of natural gas, with none of the obvious disadvantages of coal. This applies also to tar when properly preheated to obtain the desired ease of flow.

The management of the Aliquippa Works of the Jones & Laughlin Steel Co., Woodlawn, Pa., recently confronted by such a shortage of natural gas throughout the open-hearth department, turned their attention to the use of tar, available in large supply from their by-product coke ovens in Pittsburgh, less than 20 miles away. A standard Tate-Jones burner, using preheated tar, was successfully applied to the open-hearth furnaces. A problem, however, was the application of tar to ladle drying, particularly to 100-ton ladles or larger. Several burners were demonstrated and good results were obtained with a Tate-Jones burner especially designed for this particular operation.

The ladles were 10 ft. in diameter and 12 to 14 ft. deep, tapering slightly toward the bottom. A square sheet iron cover was placed over the top of the ladle, resting on its corners and leaving four spaces around the cover for the products of combustion to escape. The burner fired through a 16 in. hole in the center of the cover. The tar was preheated and reached the burner at 160 to 200 deg. Fahr. at a pressure of 100 to 110 lb. per sq. in. Steam for atomization of the tar was supplied dry to the burner at 130 to 140 lb. per sq. in. It is essential that the atomizing steam be dry, and to effect this a separator and trap were installed on the steam line several feet from the burner. The steam and tar pressures mentioned are data of this particular installation and may vary widely from the above values.

The burner itself is of the swinging type and was attached to the side of the working platform behind the open-hearth furnaces. When operating it is lowered into a horizontal position and when not in use is raised flat against the supporting column, out of the way of the cranes. The amounts of tar and steam used are adjusted very closely by valves at the furnace platform. A patented brass mixer inside the burner tip atomizes the tar, so that it leaves the burner so finely "broken up" as to be practically a gas. The flame strikes the bottom of the ladle, spreads evenly along the bottom, and is uniformly distributed around the ladle wall, thus applying practically all the heat to the ladle lining. No air is supplied artificially for combustion, all the necessary air being induced through the hole in the cover by the tar and steam mixture, thus the blower installation so generally necessary in burning oil or tar is eliminated.

A green, or newly lined ladle was dried in 1¼ to 1½ hr., this comparing with 2½ to 3 hr. usual with natural gas. Less than 10 min. was required to dry a stopper hole.



Tate & Jones Tar Burner Attached to the Side of Platform, and Ready for Lowering into the Ladle. When not in use the burner is raised flat against the supporting column. The line sketch insert illustrates how the plate rests on the ladle and the air openings that result

*Service engineer Tate, Jones & Co., Pittsburgh.

The American Steel Co., Park Building, Pittsburgh, recently received an order from one of its customers in Havana, Cuba, for a lot of tin plate and in seeking a permit for the shipment was advised by the Florida East Coast Railway that the cars would be furnished by the Pressed Steel Car Co., Pittsburgh, which at the time was completing an order for 50 cars for the Havana Railway. The American Steel Co. also used several of the new cars for the shipment of nails going to Cuba. The tin plate was shipped from Waynesburg, Pa., being routed from Washington, Pa., to Key West and thence by the ferry to Havana. The nails were shipped from Ellwood City, Pa., where is located the wire plant of the American Steel Co.

The Bryant Electric Co., Bridgeport, Conn., electrical appliances, has resumed operations after a shutdown of two weeks. The plant is operating full, approximately 1200 being on the pay-roll.

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Comptroller Williams's Misrepresentation

Radical labor agitators, when unable to think of any other charge to make against manufacturers, have sometimes accused them of closing their plants in order to accomplish a wicked purpose. It was hardly to be expected, however, that a man occupying an important position in the Government and closely connected with the financial affairs of the nation would be guilty of the absolutely unfounded assertions made by John Skelton Williams, Comptroller of the Currency. They were part of the Comptroller's swan song, as he is about to leave the office to which he has held with such remarkable tenacity, in spite of the fact that the United States Senate, deeming him unfit, refused to confirm his reappointment.

In his report to Congress, which has just been made public, Mr. Williams discusses not only banking affairs, but business conditions in general, and the published summary of its principal features states that he "criticizes the efforts of profiteers to maintain prices of manufactured products on an artificial and indefensible basis, especially with reference to steel and iron products." He says in part:

> The tendency to maintain excessive profits was particularly seen in the steel and iron and coal industries. By closing down mills and mines the output of steel and iron, following the armistice, was reduced approximately one-fourth for the purpose of enabling manufacturers and miners to obtain, because of the insistent and peremptory demand for coal and iron, the exorbitant profits realized during the war, instead of the more moderate profits which they would have had to accept if the maximum output had been maintained. While the profits of steel manufacturers and coal operators were swollen, the country became poorer from the lack of production brought about by the unnecessary closing down of mills and mines and the incidental idleness of labor. . . . As steel and iron are so largely at the very foundation of industrial activity and business development, it is essential that the prices of these fundamental products should come down to a fair, just and normal basis if we are again to attain the prosperity for which we hope.

It is difficult to believe that the Comptroller of the Currency has forgotten what was well known to official Washington in the fall of 1918. The officials of the national capital, to a much greater extent than in peace times, were familiar with the conditions which prevailed in industry on Nov. 11, 1918. They knew that in the closing weeks of that year cancellations of war contracts made by the United States and by British, French and Italian Governments poured in upon the steel companies, and that there was a very marked decrease in the demand for all kinds of iron and steel products; that, fearing the consequences of hundreds of thousands of workingmen being thrown into idleness, the Government used its influence to bring about gradual readjustment, and that the Industrial Board, under the leadership of Mr. Redfield, used its influence in the attempt to stabilize prices and prevent disaster.

Iron and steel manufacturers made reductions in December, 1918, ranging from $4 to $6 per ton on finished material The prices were recommended by the general committee of the American Iron and Steel Institute, and were announced by the steel manufacturers at the final conference with the War Industries Board at Washington shortly before that board ceased to function. Then, for several weeks, there was much uncertainty. The Departments of Commerce and Labor were active in the public discussion of unemployment as related to prices. Secretary of Commerce Redfield advocated a price-stabilizing movement for the purpose of reducing unemployment to the greatest extent and of accelerating market conditions. He characterized the reports of market stagnation as alarming, and intimated that unemployment would help Bolshevism to make headway in industrial centers. The well-known price-stabilizing episode followed and the prices of the new Industrial Board, making further reductions, were agreed upon, but afterward abandoned on account of the opposition of the Railroad Administration.

All of these movements by manufacturers and Government officials were made for patriotic reasons, and nothing was further from the thoughts of anyone than the closing of mills in order to keep up prices. When mills were closed in the dull period following the signing of the armistice, it was solely for the reason that there was not

enough business to keep them going. Certainly Mr. Williams was aware of that fact and we do not believe that he has forgotten it. A very large percentage of the iron and steel products were sold at the lowest figures that had been proposed at the conferences, and in 1919 much lower prices prevailed during a considerable part of the year. These and other facts that might be stated show how completely without justification are the allegations which have been made so far as the steel business is concerned.

Later in his report the Comptroller estimates the shrinkage in values in this country during the year 1920 at from 12 to 18 billion dollars, and he says there is reason to believe that in most cases we are near the bottom, the fall in some instances having been already excessive and abnormal and not justified by actual conditions. Would the Comptroller like to see that kind of a fall in the steel business? The decline in prices of iron and steel products has been rather rapid since last October, and that it has not been "excessive and abnormal" is most fortunate. Orderly readjustment is certainly not helped by such utterances as those of the Comptroller of the Currency.

Copper and Its Substitutes

A situation exists in the copper industry unmatched in its history. Although the price has fallen below the immediately pre-war level, cost of output is in most cases higher than at that time. Europe has little money to replenish stocks and domestic demand is negligible. Stocks of copper in producers' hands, while perhaps not larger than in the past, are 400,000,000 to 500,000,000 pounds. Serious efforts are being made now to finance these stocks and production is still curtailed. In the meantime consumption does not improve and at no time since the armistice has it regained its pre-war rate.

In explaining the decline in the use of copper some striking facts were presented last week at the meeting of the New York Section of the mining engineers. Some results were given of a canvass of the domestic situation. Because practically the total copper output during the war was diverted to munitions and other war uses, certain substitutes sprang up which became widely used. In the plumbing and building industries considerably less brass has been used in recent years. It was shown that in the largest hotel in the world, completed in New York in war time, the expenditure for brass was far less proportionately than it was in the tallest building in the world, the Woolworth. In the utensil industry copper has been gradually crowded out by aluminum and other metals or alloys until now the percentage is very much less than formerly. In automobile building copper and copper alloy parts have given way to steel, iron and other metals. It is pointed out in this connection that automobile repair work has expanded inordinately, and the use of the less durable substitutes for copper is suggested in explanation. Automobiles containing the most copper are giving the best service. Copper coated nails, steel pins, galvanized sheets and monel metal have been more widely used in place of copper.

Thus far the tendency to use substitutes has not been checked. Architects of buildings and designers of automobiles are still being urged to cut down costs and to cheapen specifications. While the substitutes have their undisputed merits and their proper field, it is unquestioned that copper for the purposes for which it has long been used cannot be surpassed. Ultimately the situation will right itself. Already word comes from Germany that copper substitutes are falling by the way. In the United States and in other countries the electrification of railroads and the more general use of electricity in other ways will create a wider use for copper and at the same time make for a saving of coal and for greater industrial efficiency.

British Exports Waning

The retrograde trend in the British foreign trade in steel and iron in 1920 is strikingly revealed by the export figures for December and the year, as given on another page. As the year progressed, exports declined and imports increased until the low point in the former and the maximum in the latter were reached in the closing month. Briefly stated, the 1920 exports were only about 50 per cent greater than those of 1919 and about 65 per cent of what they were in 1913, while the imports last year were 150 per cent more than in 1919 and about 65 per cent of the 1913 receipts. Commenting on these facts the London *Iron and Coal Trades Review* says:

> At the moment the future is rather uncertain. With industry under a burden of excessive taxation and wages at present levels, any reduction in prices sufficient to bring about a revival of trade is out of the question. So far as taxation is concerned the remedy is obvious but the same cannot be said of wages. The question of exchange is the chief difficulty in the way of exports so far as the Continent is concerned; on the one hand the low exchange rate reduces foreign purchasing power and on the other encourages the dumping of cheap material in this country. Of course, eventually this position will adjust itself, but meanwhile export credit in some form is necessary to enable business to be resumed and to hasten a return to normal conditions.

The British position, aggravated by the serious unemployment problem, is not a cheerful one. So far as 1920 is concerned the American record is in marked contrast, with a constantly upward trend, culminating in the heaviest steel exports of the year in December. These, however, represented old contracts and the movement of large accumulations at Eastern shipping ports. Though 1920 was the largest year for American steel exports under peace conditions, the 1921 comparison, it is already evident, will be by no means favorable.

As a result of the British coal strike in October, American exports of bituminous coal expanded greatly, so that the average for last year was nearly twice that of the year previous or of 1913. The exports in 1913 were 1,498,896 tons per month; in 1919 they were practically the same at 1,497,000 tons per month. But for the eleven

months ended with November of last year the average was no less than 2,882,503 tons per month. The September, October and November average was about 4,000,000 tons per month. Nearly all European countries, particularly Sweden, and those of South America, bought on a large scale. The probability that the movement which has gained such headway will continue has caused some misgivings in the British coal industry. There is also to be considered the effect on the fuel costs of domestic industries of a doubling of the exports of American coal.

Our Pig Iron Capacity

Requests are often made that a statement be compiled of the total pig iron producing capacity of the country. What is sought is not the theoretical or rated capacity but the quantity of pig iron that could be produced year by year under reasonably favorable conditions. There has been no real test in actual performance since 1916, and the best method of estimation seems to be to proportion production in 1916 to rated capacity at that time and apply the factor to the present rating.

The totals of rated capacities as given in the American Iron and Steel Institute's statistical reports were 45,033,825 tons for Dec. 31, 1915, and 45,864,525 tons for Dec. 31, 1916, making a mean of 45,449,175 tons. The actual production in 1916 was 39,434,797 tons, or 87 per cent of the mean rated capacity.

The total of rated capacities as given in the last report was 50,222,400 tons, as of Dec. 31, 1919. As reported in the summary of new construction in THE IRON AGE, Jan. 6, 1921, page 106, six new furnaces were completed in 1920, with a rated capacity of 875,000 tons. This makes the rated capacity at the beginning of this year 51,097,400 tons, 87 per cent of which is 44,500,000 tons.

The coke shortage that has since been so conspicuous a factor in restricting pig iron production began in November, 1916, and the 1916 output was 300,000 or 400,000 tons less than it would have been if the conditions of the first ten months of the year had continued. On the other hand, there was somewhat less than normal loss of production by relining, and these factors might be assumed to balance. It is to be considered, however, that it is normal for furnaces to be put in good shape when in forced idleness, and that there is a general trend towards heavier production per stack through widening of hearths and improvements in practice generally. It seems fair to set the present blast furnace capacity that can be realized on at one time at 45,000,000 tons, given operating conditions similar to those of 1916.

The additional by-product coking capacity provided in recent years more than balances the blast furnace construction and the abandonment of beehive ovens. There is a surplus of coke oven capacity. Yet coke has been scarce more often than not for four years. The cause was insufficiency in transportation, either inadequate car service at beehive ovens, located at the coal mines, or inadequate supplies of coal at by-product ovens, depending on rail shipments. Unless transportation conditions are altogether recast, the limiting factor in pig iron production in future will be either lack of orders or insufficiency of transportation facilities.

Such an outlook is not a pleasing one. The iron and steel industry never had serious transportation difficulties prior to November, 1916, except in the closing months of 1902 and the early months of 1903, i.e., once in its whole lifetime. Yet it is not altogether strange that there should be transportation difficulties, for transportation plays a very important part in the manufacture of pig iron, the average quantity of material charged into blast furnaces in 1919 having been 3.46 gross tons per ton of pig iron made. In addition to this the railroads must bring some general supplies and usually must remove slag. The furnace that has its by-product coking plant requires about one and one-half times as much weight of coal as is required of coke by the furnace not provided with a coking plant. Roundly speaking, the average furnace requires four gross tons of freight service per ton of pig iron produced. If railroad conditions do restrict blast furnace operations at times, they perform a great part in enabling pig iron to be produced when they do function.

An Important Patent Office Bill

For many years the condition of the United States Patent Office has been a reproach to the nation. Owing to the parsimonious policy of one Congress after another, the appropriations made for this important part of the Government service were far from adequate. Salaries were so meager that changes were constantly being made, and as soon as a man became really competent he was likely to leave the Patent Office to take up more remunerative work. Men of ability frequently accepted employment in the Patent Office for the experience that it gave, and many a man has laid a solid foundation for law practice by the work he did at Washington. But that sort of temporary connection was not conducive to good service.

The situation became much worse after the war started and the scale of wages and salaries was rapidly revised upward throughout the country. The result has been that the patent system of the country has all but collapsed. The Patent Office is at least eight months behind in its work, inexperienced and incompetent men have been employed, and the result is unsatisfactory in the highest degree. Industries have been retarded, litigation encouraged and inventors disheartened.

As a means of correcting to some extent the intolerable conditions that exist, the Nolan bill has been passed by both the Senate and House, increasing Patent Office salaries about 20 per cent. Details have finally been agreed upon in conference and all that is now needed is a little pressure to put the measure through. The danger lies in the fact that there is a jam of legislation at Washington and the most meritorious bills are likely to suffer along with those that have little or no merit. Hence it is highly important that pressure be brought upon Congressmen to use their influ-

ence to have the Patent Office bill put through its final stages and sent to the White House before March 4. All who have dealings with the Patent Office have an opportunity now to exercise their influence with their Congressmen. They should act without delay.

After March 1 the London office of THE IRON AGE will be at 11 Haymarket, London, S.W.I., a location close to that of the American Chamber of Commerce, well-known banking houses, steamship offices and hotels, and to Piccadilly, Pall Mall, Victoria Street and Waterloo Place.

CORRESPONDENCE

Steel Prices Relatively Low

To the Editor: To indicate the extent that liquidation in values has taken place, a few comparisons with farm product values will be conclusive, particularly when it is considered that perhaps farm products have suffered more from shrinkage than most all other commodities. The comparison which follows is based on ruling rates for iron and steel and farm products, taken on the dates of January, 1914, and January, 1921.

		January 1914		January 1921	
100 lb. of steel bars would purchase of	Wheat	1.2	bu.	1.18	bu.
	Corn	2.0	bu.	2.4	bu.
	Sugar	30.0	lb.	29.5	lb.
	Wool	4.8	lb.	5.0	lb.
	Pork	.052	bbl.	.081	bbl.
100 lb. of black sheets would purchase of	Wheat	1.8	bu.	2.2	bu.
	Corn	3.0	bu.	4.5	bu.
	Sugar	46.7	lb.	54.3	lb.
	Wool	7.5	lb.	9.2	lb.
	Pork	.084	bbl.	.150	bbl.
100 lb. of wire nails would purchase of	Wheat	1.5	bu.	1.6	bu.
	Corn	2.5	bu.	3.3	bu.
	Sugar	38.5	lb.	40.6	lb.
	Wool	6.1	lb.	6.9	lb.
	Pork	.066	bbl.	.112	bbl.
100 lb. of tin plate would purchase of	Wheat	3.3	bu.	3.5	bu.
	Corn	5.4	bu.	7.2	bu.
	Sugar	83.0	lb.	87.5	lb.
	Wool	13.2	lb.	14.8	lb.
	Pork	.142	bbl.	.241	bbl.

From this comparison, it will be observed that, generally speaking, steel prices are relatively lower than the principal farm products. As related to costs, present current prices for iron and steel, or the Industrial Board rates, show the following approximate advances in percentage since 1914:

	Per Cent
Merchant bars	95
Nails	110
Tin plate	110
Sheets	130
Bessemer pig iron	85

That these advances in iron and steel since 1914 are more than justified, is evidenced by the advances in principal items of cost, as follows:

Advances Since 1914

	Per Cent
Labor	158 to 180
Local freight rates, including movement of limestone and of refuse from mills	100 to 200
Ore freight from mines to upper lake ports	85
Coal freight from mines to mills	110
Outbound freight rates in general traffic territory	90

In considering the advance in freight rates, it should also be borne in mind that labor cost in the production of a ton of steel, represents approximately 85 per cent of the total cost. It may, therefore, be confidently stated that present selling prices as related to costs are relatively lower today than they were in 1914.

The conclusion would seem to be inevitable that relief in the way of lower costs to the independent steel producers must be had both through reduction in labor cost as well as in freight rates. In other words, the advantages of the United States Steel Corporation in owning its own transportation, together with its advantages in distribution and mass production, also its collateral advantages of by-products and fabricating operations are such that they have sufficient profit outside of the legitimate profit from steel production to enable them to pay *higher wages* and sell at *lower cost;* or to put it another way, the independents are forced by these conditions to ask their men to work for less wages than corporation employees receive and also to ask the railroads to reduce freight rates. T. T. T.

Feb. 1, 1921.

Steel Ingot Output Fell in January

The steel ingot statistics of the American Iron & Steel Institute for January show that 30 companies which in 1919 produced 85.12 per cent of the total had an output last month of 2,201,866 gross tons, as compared with 2,340,365 tons in December and 2,638,670 tons in November. The falling off in January from December was 138,499 tons, or about 5 per cent, as compared with 11½ per cent in December. Estimating the production of other companies on the basis of those reporting, the total production of ingots in January was 2,590,430 tons, or 99,632 tons per operating day, counting 26 working days, against an estimated total of 2,749,489 tons or 105,750 tons per operating day in December. This is a decline of 159,059 tons. The January output is lower than that for any month in 1920.

In the table below the output of Bessemer and open-hearth works is separated and the data for 1920 by months are included.

Monthly Production of Steel Ingots by 30 Companies Which Produced About 85 Per Cent of Total in 1919—Gross Tons

	Open Hearth	Bessemer	All Other	Total
January, 1920	2,242,758	714,657	10,687	2,968,102
February	2,152,106	700,151	12,867	2,865,124
March	2,487,245	795,164	16,640	3,299,049
April	2,056,336	568,952	13,017	2,638,305
May	2,251,544	615,932	15,688	2,883,164
June	2,287,273	675,954	17,463	2,980,690
July	2,135,633	653,888	13,297	2,802,818
August	2,299,645	695,003	5,784	3,000,432
September	2,300,417	693,586	5,548	2,999,551
October	2,335,863	676,634	3,485	3,015,982
November	1,961,861	673,215	3,594	2,638,670
December	1,687,162	649,617	3,586	2,340,365
Total, 1920	26,197,843	8,112,753	121,656	34,432,252
January, 1921	1,589,961	608,276	3,629	2,201,866

Taking the January output as a basis, the ingot production was at the yearly rate of 30,985,552 tons, counting 311 operating days for the year, which compares with an estimated output in 1920 of 40,000,000 tons. The decline of 159,059 tons in the estimated ingot output of all companies in January from that of December is only about 50 per cent of the decline in pig iron output from December to January, which was about 300,000 tons.

"The History of Radio and Its Possibilities in the Steel Industry," is the subject of a paper to be read by G. Y. Allen, engineer Westinghouse Electric & Mfg. Co., East Pittsburgh, at the regular monthly meeting of the Association of Iron and Steel Electrical Engineers at Hotel Chatham, Pittsburgh, Saturday evening, Feb. 12.

The status of the foreman in modern industry is to be discussed before the Providence section of the American Society of Mechanical Engineers at the rooms of the Providence Engineering Society, Feb. 11, 8 p. m., by William O. Lichtner of Thompson & Lichtner, consulting engineers, Boston.

Reflecting lowered blast furnace activity in the Youngstown district is the statement of Robert Bentley, president of the Carbon Limestone Co., Youngstown, Ohio, that the company is shipping only three carloads of flux stone daily or at the monthly rate of 3000 tons. With Valley furnaces under full headway, the company shipped as high as 90,000 tons per month.

Iron and Steel Markets

DEEPER PRICE CUTTING

More Aggressive Policy of Independent Companies

Reductions of $5 or More Have Not Stimulated Business—All Lines Affected

Announcement by the Midvale Steel & Ordnance Co. that it would quote prices low enough to bring business to its mills, some of which have been shut down since early December, has brought the steel market this week to a new stage in price readjustment. Thus far no large business has been done, but already cuts of $5 per ton below the Steel Corporation's schedules are reported.

There are plentiful indications that other independent steel companies stand ready to take a share of the going business, even though realizing that under present conditions there will be no free buying. No definite price schedule is given out by any of the cut-price sellers, the policy being to get sufficient orders for a mill operation up to the average of independent mills.

The products chiefly affected thus far are plates, structural shapes and bars, on which the Steel Corporation prices have been 2.65c., 2.45c. and 2.35c. respectively. Sales of plates at 2.40c. are reported, of shapes at 2.25c. and of bars at 2.10c. There is no other expectation than that the whole range of rolled products, with the exception of rails, will now be offered at lower prices.

The crux of the new situation is the extent to which the wage reductions already made by some independent producers will allow them to go below Steel Corporation prices. These reductions have been from 15 to 25 per cent. One independent company has made a second reduction of 15 per cent. In the Youngstown district wage reductions are expected by the middle of February. At present high freights on raw materials there are mills whose range of action under free competition will not be great.

In all the trade's comment on the new turn in prices its effect on the Steel Corporation's position has been uppermost. The corporation's operations, while not equally full in all lines, are still at an 80 to 90 per cent rate, and there is no indication of an early change in its policy as regards either wages or prices. Leading independent mills have run at 20 to 35 per cent in the past week.

It is recalled again that many of the Steel Corporation's contracts, taken last year at prices much below those prevailing, were written down as firm orders. Much of the material, moreover, was for definite work. Another factor is that the corporation's orders are of much greater volume than all the new business now in sight, which naturally will go piecemeal to the corporation and the various independents. The stake of the corporation thus appears to be greater on the side of price and wage maintenance than of price cutting.

A good many manufacturers and jobbers will suffer fresh hurt in inventory shrinkages from the price cuts.

The sheet market has developed various prices. Mill sales of the past week have been at about $3 below the Steel Corporation's schedule. In the Central West a jobbing interest which took up surplus mill stocks has made a $7 cut. The sheet mill activities of the Steel Corporation have fallen away sharply and a 75 per cent operation may give way to a four-day week.

Rail accessories—angle bars, tie plates, track bolts and spikes—have been quite active of late, particularly in the Chicago district. One tie plate contract went at $5 per ton below the recent price. There has been some new rail business also, including 10,000 tons for the Oregon & Washington and 14,000 tons for the Missouri, Kansas & Texas.

The recent African inquiry for 25,000 tons for the Cape to Cairo line has been increased to 40,000 tons. Light rail export orders include 1500 tons this week for India. European rail mills have taken some business in standard sections for Denmark and Sweden and French mills will roll 60,000 tons for Spain, while a large locomotive order from Spain is expected to go to Belgium.

Competition in steel from the Continent of Europe looms up as a large possibility in all export calculations, Germany's chances growing better. Some German punching and shearing machinery undersold American machines in northern Ohio this week.

The developments in finished materials have not yet had any effect on the pig iron market, but before the lower prices on shapes, plates and bars were announced, pig iron had shown new evidences of weakness, especially in the South, where the $27.50 price now prevails. A large block of basic bought by a broker from a Mahoning Valley company is being offered at $28, but furnaces have not announced their willingness to sell at that price. An inquiry for 5000 tons of basic is pending in the Cincinnati market.

Owing to the probability of serious competition from foreign ores, the sellers of Lake Superior ores realize that with the prevailing cost of mining and high freight rates it will be difficult to sell in Eastern territory. This condition points to lower prices for Lake ores in 1921 than have been considered thus far. It is understood that there are large accumulations in Eastern furnace yards.

Pittsburgh

PITTSBURGH, Feb. 8.

This week has developed the first definite step looking toward the uncovering of demand so long dammed up because buyers have not regarded the prices of the Steel Corporation as the ultimate minimums. The Midvale Steel & Ordnance Co. has instructed its sales offices to find out the prices at which orders can be secured and also has granted authority to take the business. The drive on the part of this company has resulted in definite offers of tonnages of the major products at well below the regular market quotations. Since the instructions were not written, it is difficult to obtain actual information as to the prices named, but it has been verified that it named 2.25c., Pittsburgh, on shapes and bars. Unverified reports have been current of quotations of 2c. on bars and it also is rumored that the same price was named against a tonnage of plates in the Chicago district.

Other independent interests have done nothing in

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Feb. 8, 1921	Feb. 1, 1921	Jan. 11, 1921	Feb. 10, 1920
No. 2X, Philadelphia‡	$32.09	$32.09	$33.25	$45.35
No. 2, Valley furnace†	*28.00*	29.00	33.00	42.00
No. 2 Southern, Cin'ti†	*32.00*	34.50	36.50	43.60
No. 2, Birmingham, Ala.†	*27.50*	30.00	32.00	40.00
No. 2, foundry, Chicago*	30.00	30.00	32.00	43.00
Basic, del'd, eastern Pa	31.40	31.40	33.86	41.40
Basic, Valley furnace	30.00	30.00	30.00	43.00
Bessemer, Pittsburgh	33.96	33.96	33.96	42.40
Malleable, Chicago*	30.50	30.50	32.50	43.50
Malleable, Valley	30.00	30.00	32.00	43.00
Gray forge, Pittsburgh	*28.96*	29.96	33.96	42.40
L. S. charcoal, Chicago	40.50	40.50	40.50	57.50
Ferromanganese, Atl. port	90.00	90.00	100.00	175.00
Rails, Billets, Etc., Per Gross Ton:				
Bess. rails, heavy, at mill	$45.00	$45.00	$45.00	$45.00
O.-h. rails, heavy, at mill	47.00	47.00	47.00	47.00
Bess. billets, Pittsburgh	43.50	43.50	43.50	52.50
O.-h. billets, Pittsburgh	43.50	43.50	43.50	52.50
O.-h. sheet bars, P'gh	47.00	47.00	47.00	58.00
Forging billets, base, P'gh	48.50	48.50	48.50	75.00
O.-h. billets, Phila	49.24	49.24	49.24	59.10
Wire rods, Pittsburgh	57.00	57.00	57.00	65.00
Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.70	2.70	2.70	4.25
Iron bars, Chicago	2.68	2.68	2.68	3.50
Steel bars, Pittsburgh	*2.15*	2.35	2.35	3.00
Steel bars, New York	*2.53*	2.73	2.73	3.27
Tank plates, Pittsburgh	*2.40*	2.50	2.65	3.50
Tank plates, New York	*2.78*	2.88	3.03	3.77
Beams, etc., Pittsburgh	*2.25*	2.45	2.45	2.70
Beams, etc., New York	*2.63*	2.83	2.83	2.97
Skelp, grooved steel, P'gh.	2.45	2.45	2.45	2.45
Skelp, sheared steel, P'gh.	2.65	2.65	2.65	2.65
Steel hoops, Pittsburgh	3.05	3.05	3.05	3.50

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Feb. 8, 1921 Cents	Feb. 1, 1921 Cents	Jan. 11, 1921 Cents	Feb. 10, 1920 Cents
Sheets, black, No. 28, P'gh.	*4.20*	4.35	4.35	5.00
Sheets, galv., No. 28, P'gh.	5.70	5.70	5.70	6.50
Sheets, blue an'l'd, 9 & 10	*3.20*	3.55	3.55	4.25
Wire nails, Pittsburgh	3.25	3.25	3.25	4.50
Plain wire, P'gh	3.25	3.25	3.25	3.50
Barbed wire, galv., P'gh	4.10	4.10	4.10	4.45
Tin plate, 100-lb. box, P'gh.	$7.00	$7.00	$7.00	$7.00
Old Material, Per Gross Ton:				
Carwheels, Chicago	*$21.00*	$22.00	$21.00	$39.00
Carwheels, Philadelphia	25.00	25.00	25.00	40.00
Heavy steel scrap, P'gh	16.00	16.00	15.00	28.00
Heavy steel scrap, Phila	14.50	14.50	14.50	26.00
Heavy steel scrap, Ch'go	15.50	15.50	15.00	25.00
No. 1 cast, Pittsburgh	23.00	23.00	25.00	34.00
No. 1 cast, Philadelphia	23.50	23.50	22.50	40.00
No. 1 cast, Ch'go (net ton)	*18.00*	18.50	17.00	39.50
No. 1 RR. wrot, Phila	20.00	20.00	20.00	36.00
No. 1 RR. wrot, Ch'go (net)	*13.50*	14.00	13.50	26.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$4.50	$4.50	$5.00	$6.00
Furnace coke, future	6.00	6.00	6.00	6.00
Foundry coke, prompt	*5.50*	6.00	6.50	7.00
Foundry coke, future	6.50	6.50	8.00	7.00
Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	**13.50**	13.25	13.25	19.25
Electrolytic copper, N. Y.	**13.00**	12.75	13.00	19.00
Zinc, St. Louis	5.00	5.00	5.50	8.65
Zinc, New York	**5.50**	5.30	6.00	9.00
Lead, St. Louis	*4.50*	4.60	4.85	8.50
Lead, New York	*4.75*	4.85	5.00	8.75
Tin, New York	*32.50*	33.00	38.75	58.00
Antimony (Asiatic), N. Y.	5.25	5.25	5.20	11.50

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

the matter of price cuts, but it is patent that in the event any business is uncovered by the company which is active in this respect the others will go along. So far as can be learned, the effort to interest buyers in purchases at practically their own prices has not been successful. This, however, was to be expected, in view of the fact that the first effect of a sudden reduction in prices usually is to make buyers cautious. The Steel Corporation subsidiaries meanwhile are holding to the level of prices which it has observed now for almost two years, and apparently they are content to wait to see what success attends the efforts of independent companies to secure business at lower prices before taking any action either as regards selling prices or wages. It is pretty well established that the cutting of prices by independent companies is to be accompanied by lower wages, and since the rates of Pittsburgh and Youngstown companies have not yet been disturbed, it is figured that the acceptance of business at the prices named would involve a cut in wages of as much as 30 per cent. The market is even duller than it has been as a result of the apparent willingness of independents to consider lower prices, and prices are even more indefinite now than they have been at any time since the reaction in business set in last fall.

The recession in the activities of the Steel Corporation subsidiaries has been rather pronounced in the past week. The Carnegie Steel Co. has one less active blast furnace than a week ago, and while it has all of its ingot making capacity on except its Sharon, Pa., works, production is not over 90 per cent of capacity, and finishing mills are not as fully engaged as they were recently. With new business on a very light scale as compared with completed tonnages, it is probable that before the end of the month total operations now averaging close to 90 per cent will be below 80 per cent. The company at an early date will shut down its Columbus, Ohio, works, due to the lessened demand for sheet bars from the American Sheet & Tin Plate Co., which as far as sheets are concerned, is not nearly so busy as it was recently. The American Steel & Wire Co. has experienced no improvement in business and its plant operations still are declining. The National Tube Co. is the one subsidiary organization which continues to run full.

The increases in independent steel company operations are only partly sustained, for new orders have not been coming forward in volume sufficient to offset those which have been completed.

The pig iron market reflects no increase in interest on the part of melters, although one large company in the week under review bought about 2000 tons of foundry iron for early delivery.

Pig Iron.—The Standard Sanitary Mfg. Co. has closed for 2000 tons of foundry iron for prompt delivery to its Pittsburgh district plants taking equal quantities of iron running 1.75 to 2.25 silicon and 2.50 to 2.75, paying $28, Valley furnace, for the former and $29.25 for the latter grade. This constitutes the only important business that has passed in the market in the past week. Since more iron is available at $28, Valley furnace, a higher quotation hardly appears warranted, although a few small tonnages recently were done at $1 a ton more. Interest in the steel making grade remains dormant and actual prices are extremely indefinite. Merchant interests continue to quote basic at $30, Valley furnace, and Bessemer at $32, but neither price has found basis in sales nor is it believed that any business except for carload lots could be done at these prices. It can be repeated that the appearance of a genuine inquiry for a sizable tonnage would bring out quotations well below these figures, but in the lack of anything like real inquiries no one producer is disposed to name prices merely for others to shoot

at. It is intimated that several of the independent steel companies would accept business in basic at $28, but these interests are not offering iron publicly at any price. The January averages of W. P. Snyder & Co. were $30 on basic and $32 on Bessemer, a decline of $3 in each grade from the December averages, but they were based entirely on shipments against old orders and not on new sales.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.96 per gross ton:

Basic	$30.00
Bessemer	32.00
Gray forge	27.00
No. 2 foundry	28.00
No. 3 foundry	27.50
Malleable	30.00

Ferroalloys.—The situation is practically unchanged both as regards demand and prices. With steel works operations on an even smaller scale than they were recently, the demand naturally shows no increase and prices remain entirely nominal and merely are appraisals or approximations of what might be done. We note a sale of a few carloads of average 20 per cent spiegeleisen by one maker at $40 furnace, thus establishing this price as the going quotation. Makers of 50 per cent ferrosilicon generally are holding for $92 to $95 furnace, freight allowed, but no business has been done in this district at either figure. As a matter of fact, all makers are not adhering rigidly to their public quotations, and basis exists for the belief that at least one producer would take business at around $80 delivered. With no sales being made, all quotations are nominal. Downward tendency of foundry iron is expected to bring about another cut in silveries and Bessemer ferrosilicon shortly for the reason that these irons are based upon the price of foundry grades.

We quote 76 to 80 per cent domestic ferromanganese at $100 furnace, freight allowed; British, $100 c.i.f. Atlantic seaboard; resale tonnages, $90 delivered. We quote average 20 per cent spiegeleisen at $40 furnace, on direct business and $35 for resale tonnages, 50 per cent ferrosilicon, $92 to $95 furnace, freight allowed, on direct business. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces, as follows: 9 per cent, $54.50; 10 per cent, $58; 11 per cent, $61.30; 12 per cent, $64.60. Silvery iron, 6 per cent, $40; 7 per cent, $41.50; 8 per cent, $43.50; 9 per cent, $45.50; 10 per cent, $48; 11 per cent, $51.30; 12 per cent, $54.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

Billets, Sheet Bars and Slabs.—Business is practically dormant and actual quotations indeterminate. Such inquiries as are coming out for the most part are for the purpose of finding out how low producers will go and such actual business as is being closed is at prices privately negotiated between maker and buyer. Quotations mean little in view of the fact that both sales and shipments against contracts are extremely limited. With some of the independent companies naming lower prices on at least the major products, lower prices would seem to be ahead on all kinds of semi-finished material.

We quote 4 x 4-in. soft Bessemer and open hearth billets at $43.50; 2 x 2-in. billets, $45.50; Bessemer and open hearth sheet bars, $47; slabs, $46; forging billets, ordinary carbons, $48.50 to $51, all f.o.b. Youngstown or Pittsburgh mills.

Wire Rods.—The market is exceedingly inactive, but there is a fair pretense on the part of all makers of holding to the recent base of $57 for the base size of common soft rods. An export inquiry carrying a bid of $55 was turned down, but on the other hand it is stated that some rods running a little high in carbon, but which could be used for nails, have been offered for less than $50. As giving base to a price of $57 it can be stated that a small tonnage of screw stock rods recently were sold for $62, such rods usually bringing $5 per ton above the base on soft rods. Not many rod mills are in operation in this district at present. Prices are given on page 413.

Wire Products.—It has been a lean week for all makers both in the matter of new orders and shipping instructions against old ones. Expectations of lower prices are making buyers extremely cautious, and while there has been no price cutting by Pittsburgh district manufacturers, reports that nails have sold at $3.20 or $1 per ton below the regular market quotation, and that as low as $3.45 has been done on galvanized wire to fence manufacturers, find some credence. However, these prices cannot be considered as going market quotations for the reason that acceptance of business at these figures probably was dictated by a desire to keep some capacity in operation.

We quote wire nails at $3.25 base per keg, Pittsburgh, and bright basic and Bessemer wire at $3.25 base per 100 lb., Pittsburgh.

Structural Material.—The most interesting development of the week has been the quotation by one of the independent companies of 2.25c. on 2500 tons of plain structural material. This is a cut of $4 a ton from the price of the Steel Corporation, and so far has been named by only one of the independent companies. It failed to bring the order. Independent shape mill capacity is very poorly engaged and the Steel Corporation is much nearer the end of its orders than it was recently. Inquiries for fabricated steel are reported to be more numerous, but there has been no increase in awards, which are few and involve only small tonnages.

Steel Rails.—Quotations of 2.75c. for 25 to 45-lb. sections by leading independents in this district have failed to bring business and one of them has named 2.45c. in an effort to uncover demand. It is stated that the makers of standard rails are rolling freely at present and getting the usual number of defective rails, which are being rerolled into light sections and being offered at even less than 2.45c.

We quote 25 to 45-lb. sections, rolled from new steel, 2.45c. to 2.75c.; standard rails, $45, mill, for Bessemer, and $47 for open-hearth sections.

Cold-Finished Steel Bars.—The market is quite as dull as it has been at any time recently and while the general quotation still is 3.60c. base, reports are heard that some makers have been willing to take on orders at 3.50c. and 3.60c. has been accepted on less than carload lots, which ordinarily are sold from warehouses at an advance of at least 75c. per 100 lb. over the mill base. With hot-rolled bars being cut in price by some of the independent makers, there is a possibility of lower quotations on cold-finished bars and it is possible that the present differential of $1.25 per 100 lb. between hot and cold-rolled bars will not be maintained. The present spread is practically double what it was before the war and was established as a means of stimulating production during the war by allowing high cost mills to operate.

Iron and Steel Bars.—It is reported that a Pittsburgh bolt maker recently closed on 500 tons of bars at 2c., the business having gone, according to the report, to a Buffalo mill. Confirmation of this business, however, is lacking. An inquiry for 200 tons of bars from another bolt maker brought out a quotation of 2.25c., Pittsburgh, from one independent, and while a sale was not closed, it is believed that this price about measures the present maximum possibilities of the market. Little independent bar mill capacity now is engaged and several of the Carnegie Steel Co. mills are idle or running intermittently. The latter still is quoting 2.35c. base. Another reduction of $5 per ton has been made in prices of refined iron bars to 3.25c. base, for carloads. Very little demand is coming out for iron bars at present.

We quote steel bars rolled from billets at 2.15c. to 2.35c.; reinforced bars, rolled from billets, 2.25c. to 2.35c., base; refined iron bars, 3.25c., in carloads, f.o.b. mill, Pittsburgh.

Tin Plate.—The market remains exceedingly dull, and apparently a change for the better is not very near at hand. Packers are said to have a good deal of the 1920 pack of perishable foods on hand, and container manufacturers report difficulty in interesting them in their 1921 requirements, at prices based upon $7 tin plate. Tin plate manufacturers, however, are not inclined to meet demands for lower prices on the ground that the container manufacturers did not make as full a reduction in can prices as they were able to when the price of tin plate was reduced from $7.75 to $7. One of the cheerful developments in connection with the situation is the report that the War Finance Corporation has approved a loan of not more than $10,000,000 for the financing of exports of condensed milk and other

milk products. Active tin plate capacity outside of the leading interests still constitutes only a small fraction of the whole. The McKeesport Tin Plate Co., which operated 20 of its 44 mills for a period of about 10 days last month and then shut down, has made a wage cut of 20 per cent and yesterday resumed operation at about a 50 per cent schedule. All of the tin plate mills of the Wheeling Steel & Iron Co. and the Washington Tin Plate Co. are down. Other independent capacity in this district is about 25 per cent engaged.

Hoops and Bands.—Business remains slack, and all makers need business, but so far there has been no important deviation from the regular price of 3.05c., base, Pittsburgh.

Hot-Rolled and Cold-Rolled Strips.—Business is still at a standstill both as regards new orders and shipping instructions against old ones. Hot-rolled strips still are quoted by all makers at 3.30c. and cold-rolled at 6.25c., but these prices are untested.

Nuts, Bolts and Rivets.—Recent price reductions have failed utterly to stimulate the demand. Buyers do not look upon present prices as the ultimate minimum. Prices and discounts are given on page 413.

Iron and Steel Pipe.—Demand in oil country goods steadily is decreasing due to the fact that the continued downward tendency of oil prices is making for delay among producers in the matter of purchases of well requirements. The past week has seen a further decline of 25c. per bbl. in Pennsylvania crude oil, while Oklahoma crude has fallen from $3.50 to $2 per bbl. The spring demand for merchant pipe has not yet begun to develop and the week has seen some decline in independent producing capacity. A Pittsburgh independent which recently was running full now is down to about 75 per cent operations and shipments are not fully absorbing production. Pipe mills of the Wheeling Steel & Iron Co. are down and practically all of the business of this company is being turned out at the plant of La-Belle Iron Works, which is operating about 70 per cent of capacity. Both these companies are subsidiaries of the Wheeling Steel Corporation. Republic Iron & Steel Co. is running full and claims to be shipping its entire output. Youngstown Sheet & Tube Co. is doing about 60 per cent in its pipe mills. The National Tube Co. reports 100 per cent operations. A number of line pipe inquiries are out, among them being one of 75 miles of 6-in. pipe and another of 20 miles of the same size, for shipment into the South, while an inquiry for 40 miles of 4-in. pipe for Western shipment also is noted. Most of such inquiries, however, are for export and all are regarded as "feelers." No change yet has been made in prices of either iron or steel welded pipe, although the fact that plates, from which large pipe is made, definitely are lower, makes possible a cut in line pipe prices. Discounts are given on page 413.

Spikes.—Makers are sold from four to six weeks ahead on small spikes and have enough business in standard spikes to keep them fairly busy over the remainder of this month. New demands, however, are not very large or urgent in either size and with price-cutting reported in bars by the independents, there is a possibility of a further revision downward in pipe prices. Prices are given on page 413.

Plates.—The Steel Corporation has made no change in its price, still holding to 2.65c., Pittsburgh, but as far as all but one of the independents are concerned the market is 2.50c., and some small tonnages are reported to have been sold at that figure.

We quote sheared plates of tank quality ¼ in. and heavier at 2.40c. to 2.65c., Pittsburgh.

Sheets. There has been a sharp falling away in the sheet mill operations of the American Sheet & Tin Plate Co., which last week averaged about 75 per cent operations, and the schedule of which for this week is about the same. Live business of this company has dwindled rapidly in the past few weeks, and it has one of its specialty mills down this week. Barring early improvement in business a four-day-a-week schedule is likely before the end of the month. Some of the independent capacity which was started up recently has shut down this week, this being particularly true of the Mahoning Valley makers, and the loss has only been partially offset by resumption at independent mills where wage cuts have been accepted by the workmen. Total operation of the sheet mills of the country hardly are 50 per cent of capacity. Reductions of $3 per ton have been announced by at least one independent on blue annealed and black sheets. Prices given on page 413 are those of the American Steel & Wire Co. and most independents.

Boiler Tubes.—Recent price reductions have failed to bring about any increase in the demand and plant operations rapidly are running down. Jobbers have revised their prices on charcoal iron tubes in keeping with a recent cut in mill quotations. Jobbers' prices on net tons follow:

	Jobbers' Prices		
Boiler Tubes	Charcoal Iron	Lapwelded	Seamless
1¼-in.			20c.
1½-in.			19c.
1¾-in.	25½c.	19c.	21c.
2-in.	22¼c.	18c.	21c.
2¼-in.	25c.	19¾c.	23c.
2½-in.	30c.	22½c.	27¾c.
3-in.	37c.	28c.	33c.
3¼-in.	43¾c.	33c.	40c.
3½-in.	44¼c.	30½c.	42c.
4-in.	56¼c.	38¾c.	59½c.
4½-in.	63½c.	44c.	

Carload discounts are given on page 413.

Old Material.—The Carnegie Steel Co. has withdrawn from the market and consequently the support provided by the purchases of that company has disappeared. While some of the independent steel companies resumed in part in their steel works in the past week, this has brought no demands for scrap, and more than has been the case recently, the market is being established by the prices which dealers are paying for material they are throwing down on their yards. It is not possible to make much change in prices of either the steel works or foundry grades for the reason that not much scrap is coming out at current prices. Railroads are not pressing much scrap at present prices, while much less material than usual is originating in the steel mills and machine shops because of the low rate of operations. Dealers are short in a number of grades but as they are not being pressed by customers for delivery are not obliged to cover. If there was a demand for scrap, it is probable that on account of the limited supplies prices would advance quite sharply, but the demand does not exist.

We quote for delivery to dealers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh	$16.00 to $17.00
No. 1 cast, cupola size	22.00 to 22.50
Rerolling rails, Newark and Cambridge, O.; Cumberland, Md.; Parkersburg and Huntington, W. Va.; Franklin, Pa., and Pittsburgh	17.00 to 18.00
Compressed sheet steel	13.00 to 14.00
Bundled sheet sides and ends, f.o.b. consumers' mills Pittsburgh district	11.00 to 12.00
Railroad knuckles and couplers	16.50 to 17.50
Railroad coil and leaf springs	16.50 to 17.50
Railroad grate bars	15.00 to 16.00
Low phosphorus melting stock, bloom and billet ends, heavy plates, ¼-in. and heavier	24.00 to 25.00
Railroad malleable	16.00 to 17.00
Iron car axles	36.00 to 37.00
Locomotive axles, steel	32.00 to 33.00
Steel car axles	22.00 to 23.00
Cast iron wheels	22.00 to 23.00
Rolled steel wheels	16.50 to 17.50
Machine shop turnings	10.00 to 10.50
Sheet bar crop ends at origin	16.00 to 17.00
Heavy steel axle turnings	13.00 to 14.00
Short shoveling turnings	12.00 to 13.00
Heavy breakable cast	17.00 to 18.00
Stove plate	15.00 to 16.00
Cast iron borings	12.00 to 13.00
No. 1 railroad wrought	16.00 to 17.00

Coke.—Hardly enough business is going on to create a market. So many blast furnaces, ordinarily dependent upon beehive oven coke, are idle that there are practically no spot demands and shipments on contracts are very much curtailed. Conditions are much the same with the foundries and coke going to this need also is slow of sale. Diminished consumption has been met by a curtailed production, but there continues to be more coke than can be moved and prices favor buyers. While oven operators are not much disposed to consider less than $5 per net ton oven, for a week's run of furnace

coke, it is a fact that not much spot business has been done that high lately, the more general basis being from $4.50 to $4.75, while occasional sales of loaded cars still are heard of as low as $4.25. Spot tonnages of foundry coke have been offered as low as $5 per net ton oven, but there is a disposition to regard such offerings as being off in some respect and the market on really standard coke hardly is quotable below $5.50, while $6 is as low as makers of reputable brands are willing to go at the moment. The contract or future market is indefinite in the lack of business, but there are suggestions of second quarter contracts in furnace coke on a 5½ to 1 basis on Valley basic pig iron, while one company which originally took first half contracts in foundry coke at $15 and subsequently revised them to $10, is understood to be billing February shipments at $7.50. This is $1 per ton above the price which has been named by other producers against contract shipments.

Company Elections

At the annual meeting of the Pawling & Harnischfeger Co., Milwaukee, Wis., the following officers were elected: Henry Harnischefeger, president and treasurer; Arthur G. Henricks, vice-president and general manager; Walter Harnischfeger, second vice-president; René Von Schleinitz, secretary.

Martin J. Yocom, the retiring secretary, after 21 years with the company, has decided to take a vacation, which may include an extended Southern trip for the benefit of his health.

At the annual meeting of the Allegheny Steel & Tube Co., 34-40 West Street, New York, on Jan. 22, and at a directors' meeting, which followed, the following board of directors were elected: Louis Kilian, chairman; Theodore L. Dodd, William T. Dunn, John Benjes, Noble W. Wood, Bernard Hoersgen, Henry Latshaw.

The officers elected were: Noble W. Wood, president; Theodore L. Dodd, vice-president; William T. Dunn, vice-president; Bernard Hoersgen, vice-president; John Benjes, treasurer; Henry Latshaw, secretary; C. Gottesman, assistant secretary.

J. R. Martin, Montreal, was not re-elected as vice-president, nor as a director, nor was C. Gottesman re-elected as a director, and in their places on the board there were elected Theodore L. Dodd, Western sales manager of the Worth Steel Co., in active charge of the Chicago office, and William T. Dunn, formerly general manager, and director of the International High Speed Steel Co., still continuing as a director, however, in that firm, but not actively; he is now actively connected with the Allegheny company, in charge of the Boston office.

Walter H. Baker, president, Universal Steel Co., Bridgeville, Pa., was elected a director of the Electric Alloy Steel Co., Youngstown, Ohio, at the annual meeting. Stockholders were informed that the company has successfully developed a crucible steel. The Electric Alloy Steel Co. operates a plant at Charleroi, Pa., which it acquired from the Universal Steel Co. Its equipment includes two six-ton electric furnaces, while another three-ton furnace is being added. Vice-President A. E. Adams presided over the meeting in the absence of President Louis J. Campbell, detained by illness. Directors who were re-elected are J. A. Campbell, W. A. Thomas, Jonathan Warner, Charles S. Thomas, T. J. Bray, S. P. Ker, L. J. Campbell, Maurice Joseph, A. E. Adams, L. A. Manchester and S. Livingston Mather.

L. A. Lenhart, formerly manager, General American Tank Car Corporation, East Chicago, has been named vice-president and general manager of the Youngstown Steel Car Co., Youngstown, Ohio, and has already assumed his new duties. He will be in immediate charge of the Niles plant of the company. Mr. Lenhart formerly served the Pressed Steel Car Co. and the Ralston Steel Car Co., Columbus. William Wilkoff was re-elected president of the Youngstown Steel Car Co. at the yearly meeting; D. J. Wilkoff, vice-president, and L. C. Wilkoff, secretary-treasurer.

WORLD SHORTAGE OF STEEL

Sir Robert Hadfield Puts It at 25 to 30 Million Tons—American Competition

Sir Robert A. Hadfield has written an article in the *Iron and Coal Trades Review*, London, on "The World Hunger for Steel." Estimating the production for 1920 as under 70,000,000 tons, Sir Robert's opinion is that the world to-day is short some 25,000,000 to 30,000,000 tons of steel which is "required to meet the needs of ever advancing civilization." The fuel situation in Great Britain is referred to in particular and it is stated that "the cost of coal at the pit mouth in Great Britain is 34s per ton, or twice as much as in the United States. The British miner recently was mining about 200 tons per man as against the American miner's 800 tons. It is interesting to add that coal in South Africa, India and China is being raised at very little more than 5s. per ton." The article continues:

> On the whole, I feel that after all the difficulties which have beset us since the war finished we are holding our own very well. The need of the world for iron and steel and the impossibility of one or two nations satisfying that great need are self-evident. That is why we have seen firms in this country putting down new plants and opening up new avenues of industrial endeavour. That does not look as if they feared foreign competition, and I take these extensions as supporting the opinions I have expressed. But one cannot make a forecast with any certainty to-day. The conditions in the iron and steel trade in different countries vary greatly and are constantly changing. It may be that we shall have to face continued competition from abroad. That contingency must always be kept in mind. If it become too severe and we cannot meet it by altering conditions in our works, it will have to be met in some other way.

Sir Robert Hadfield pays some attention to the rumor that was cabled some months ago that "the iron and steel manufacturers of the United States and France were trying to come to an arrangement with the intention of cutting the ground from under the feet of the British manufacturers in the markets of the world." This story was circulated at the time of Judge Gary's visit to France last summer. Sir Robert continues:

"The National Federation of Iron and Steel Manufacturers (London) knew all about it and declared that there was no truth in the rumor, a statement which I was glad to make public in a letter to the *Times* recently. I said then: 'The British makers have no information whatever which leads them to believe that such an arrangement has been made or contemplated, and Messrs. Schneider et Cie, the principal French manufacturers, have expressly denied any knowledge of such a combine or arrangement. It should be remembered that the relations between the American and British iron and steel makers have always been, and still are, very good. The British makers have great faith in the high sense of honor of their American colleagues, and are therefore unwilling to place any reliance upon rumors of the kind which have been recently canvassed.' * * *

"To finally clinch this matter and to show the sincerity of our American friends in the iron and steel world, only recently I received from the London offices of the Foreign Affairs News Service of New York a statement as follows: 'We communicated by cable with Judge Gary, who in his reply said: "The statement of Sir Robert Hadfield is a very good one, and I confirm everything said therein."'"

A new explosive which is non-freezing is announced by the Atlas Powder Co., Philadelphia. It is claimed that it cannot freeze at any temperature, that it withstands the heat of summer, that its stability avoids premature explosions and that it will not cause headaches to those who handle it.

The Hess-Bright Mfg. Co., Front and Erie Streets, Philadelphia, manufacturer of ball bearings, has arranged for the establishment of an extensive laboratory for steel testing and affiliated work. The department will be in charge of Dr. Haaken Styri, formerly of the Carnegie Institute of Technology.

Chicago

CHICAGO, Feb. 8.

Present indications point to a breaking away from the Industrial Board prices by one or two of the independent mills. Whether a horizontal reduction in quotations will be made or there will merely be a continuation of shading, is not yet apparent. Business is quiet in all commodities.

Pig iron has shown further weakness, although concessions made have not been sufficiently general to warrant another reduction in our quotations on Northern irons. Southern foundry, however, has dropped to $27.50 base, Birmingham, that being the official quotation of a large producer.

Generally speaking, iron and steel works operations are on substantially the same basis as a week ago. The Inland Steel Co. continues to operate two out of three blast furnaces, its 18 sheet mills, the continuous merchant mill and its bolt and spike department. It has shut down its plate mill, but has started up its 24-in. structural mill and its Chicago Heights hard steel bar mills. The latter has about 10 days' work ahead. The leading steel interest still has 22 furnaces in blast, but has reduced its steel making to about 80 per cent of capacity and is rolling finished material at a 75 per cent rate. The plate, structural and bar mills are not getting out normal production, and some of the bar capacity is operating intermittently. Four bar mills are idle at Milwaukee and the other two will run part of this week. At Gary two bar mills are inactive. In other respects, the situation in the district is about the same. The Republic bar iron plant, which was idle last week, has one mill running again, while the Interstate bar iron works, which operated full until Saturday, has been shut down. The Wisconsin Steel Co. mills are still rolling at the rate of 40 per cent of normal, while the Mark mills of the Steel & Tube Co. of America remain on a 75 per cent basis. There has been no change in the merchant furnace situation.

Pig Iron.—Aside from the occasional sale of small lots from carloads up to 500 tons, the market is without activity. Offerings of resale malleable have been materially reduced, but at the same time the demand for that analysis of iron is smaller than for other grades. A few small sales of basic and foundry have been made at as low as $28, Chicago, but the ruling level of the market is still from $30 to $31. Southern foundry has definitely receded to $27.50 base, Birmingham, as the result of a reduction to that price by one of the leading producers. Even that low figure will not bring out much business in this section, as the addition of $6.67 in freight will bring the delivered price considerably above going quotations on Northern grades. Silvery is weak, electrolytic material now being available at less than the blast furnace product. Electrolytic 8 per cent has been offered as low as $42, delivered, Chicago. The new blast furnace of the St. Louis Coke & Chemical Co. at Granite City, Ill., was blown in to-day.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 70c. per ton:

Lake Superior charcoal, averaging sil. 1.50, deliv. at Chicago		$40.50
Northern coke, No. 1, sil. 2.25 to 2.75	$31.25 to	32.25
Northern coke foundry, No. 2, sil. 1.75 to 2.25	30.00 to	31.00
Northern high phos	30.00 to	31.00
Southern coke, No. 1 foundry and No. 1 soft, sil. 2.75 to 3.25		37.17
Southern coke, No. 2 foundry, sil. 2.25 to 2.75		35.42
Southern foundry, sil. 1.75 to 2.25		34.17
Malleable, not over 2.25 sil	30.50 to	31.50
Basic	30.00 to	31.00
Low phos. Eastern furnace (copper free)		40.00
Silvery, sil. 7 per cent	42.00 to	44.53

Ferroalloys.—The market is dull and without features.

We quote 75 to 80 per cent ferromanganese, $90 to $95 delivered; 50 per cent ferrosilicon, $95 delivered; spiegeleisen, 18 to 22 per cent, resale, $45 delivered.

Plates.—Demand is exceedingly light and while most mills have not made a definite price reduction, it is probable that any inquiry calling for 100 tons or more would bring out concessions.

The mill quotation is 2.40c. to 2.65c., Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.78c. for plates out of stock.

Structural Material.—Buying of structural shapes is at a low ebb and recent developments indicate an increasing disposition on the part of the independent mills to concede a few dollars a ton to secure orders. Fabricating awards, which seemed to be on the increase during January, have dropped off sharply during the past week. The California Steel Co. has been awarded a contract to fabricate 320 tons for the Anglo London Paris Bank Building, San Francisco.

The mill quotation is 2.25c. to 2.45c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.58c. for materials out of warehouse.

Bolts and Nuts.—A few fair-sized inquiries have appeared lately, but they have not developed into orders. Manufacturers of rivets in this section have followed the reductions of Eastern makers and are now quoting $3.90 per keg on large structural rivets and $4 per keg on large boiler rivets, f.o.b. Pittsburgh. For manufacturers' prices on bolts and nuts see finished iron and steel, f.o.b. Pittsburgh, page 413.

Jobbers quote structural rivets, 5.08c.; boiler rivets, 5.18c.; machine bolts up to ⅞ x 4 in., 50 per cent off; larger sizes, 45 off; carriage bolts up to ⅞ x 6 in., 40 off; larger sizes, 40 off; hot pressed nuts, square and hexagon tapped, $1.60 off; blank nuts, $1.85 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off. Quantity extras are unchanged.

Sheets.—Buying is so limited that it can hardly be said that a ruling level of prices exists. Considerable shading has been going on and an attractive inquiry would bring out a substantial concession under the recent market.

Mill quotations are 4.20c. to 4.35c. for No. 28 black; 3.20c. to 3.55c. for No. 10 blue annealed, and 5.70c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stock. No. 10 blue annealed, 4.68c.; No. 28 black, 5.75c.; No. 28 galvanized, 7.10c.

Rails and Track Supplies.—The Los Angeles & Salt Lake is inquiring for 10,000 tons of rails. There is a fair amount of inquiry for track fastenings, but the railroads are slow in placing orders. Prices are holding rather firmly on track supplies, but in light rails independents have been quoting from 2.60c. to 2.65c., mill, and sometimes lower, despite the fact that there is not much business in the market.

Standard Bessemer rails, $45; open-hearth rails, $47; light rails, 2.75c., f.o.b. makers' mills.

Standard railroad spikes, 3.65c., Pittsburgh. Track bolts with square nuts, 4.60c., Pittsburgh. Steel tie plates, 3c., and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3c., f.o.b. makers' mills.

Cast Iron Pipe.—Rush City, Minn., will close on 300 tons on Feb. 18 and Pine Island, Minn., will receive tenders on 105 tons on Feb. 15. Considerable business is in sight but municipalities are slow in acting on their requirements.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., $69.10; 6-in. and above, $64.10; class A and gas pipe, $4 extra.

Bars.—There continues to be a scarcity of inquiries and orders for all kinds of bars. The ruling market quotation on mild steel bars is still nominally 2.35c., Pittsburgh, but it is doubtful whether any new business of consequence would bring the full price. Bar iron is fairly firm at 2.68c., Chicago, but in this product also some shading has been reported. There is practically no demand for hard steel bars rerolled from rails, and quotations range from 2.50c. to 2.75c., f.o.b. mill.

Mill prices are: Mild steel bars, 2.15c. to 2.35c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 2.68c., Chicago; rail carbon, 2.50c. to 2.75c. mill, nominal.

Jobbers quote 3.48c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.25c. for rounds and 5.75c. for flats, squares and hexagons, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. on orders up to 1000 lb. Jobbers quote hard and medium deformed steel bars at 3.48c. base.

Wire Products.—New bookings are small and consist in the main of requests for rush shipments of small lots. Most of these orders come from the South. The principal current demand is for poultry fence. The

leading interest continues to operate at a normal rate, but is piling part of its output. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 413.

Old Material.—The price advances of a week ago caused by the speculative buying of dealers have given way to declines, expected activity on the part of consumers not having materialized. The market is exceedingly quiet in all departments. Railroad offerings include 3000 tons advertised by the Great Northern, 2500 tons listed by the Union Pacific, and 4000 tons on which the Pennsylvania Southwestern region will accept tenders to-day.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	$23.50 to $24.00
Relaying rails	37.50 to 40.00
Car wheels	21.00 to 21.50
Steel rails, rerolling	15.50 to 16.00
Steel rails, less than 3 ft	17.00 to 17.50
Heavy melting steel	15.50 to 16.00
Frogs, switches and guards, cut apart	15.50 to 16.00
Shoveling steel	15.00 to 15.50
Low phos. heavy melting steel	18.50 to 19.00
Drop forge flashings	12.00 to 12.50

Per Net Ton

Iron angles and splice bars	21.00 to 21.50
Steel angle bars	14.50 to 15.00
Iron arch bars and transoms	22.50 to 23.00
Iron car axles	34.50 to 35.00
Steel car axles	17.50 to 18.00
No. 1 busheling	14.00 to 14.50
No. 2 busheling	9.00 to 9.50
Cut forge	13.75 to 14.25
Pipes and flues	10.50 to 11.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	13.50 to 14.00
Steel knuckles and couplers	15.00 to 15.50
Coil springs	18.00 to 18.50
No. 1 cast	18.00 to 18.50
Low phos. punchings	15.50 to 16.00
Locomotive tires, smooth	12.00 to 13.00
Machine shop turnings	7.50 to 8.00
Cast borings	10.50 to 11.00
Stove plate	18.00 to 18.50
Grate bars	13.00 to 13.50
Brake shoes	12.50 to 13.00
Railroad malleable	15.50 to 16.00
Agricultural malleable	15.50 to 16.00
Country mixed	10.50 to 11.00

New York

NEW YORK, Feb. 8.

Pig Iron.—The developments as to lower prices on finished materials are being watched with interest by sellers of pig iron, but the new policy of some of the independents has not as yet influenced the pig iron market, which is extremely dull with a tendency toward lower quotations. A Bridgeport melter has bought 1000 tons of foundry and 500 tons of malleable, and it is understood that the foundry iron was purchased at less than $30 furnace. A limited tonnage of foundry iron was sold on a basis of $30, Buffalo, a price which has prevailed for some time. On the very limited inquiry which has appeared for second quarter furnaces are slow to quote on account of various elements of uncertainty now prevailing. Resale iron has disappeared to a large extent.

We quote delivered in the New York district, as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $5.46 from Buffalo and $6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25	$33.52 to $35.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	31.77 to 33.77
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	30.52 to 32.52
Buffalo, sil. 1.75 to 2.25	35.46
No. 2 Virginia, sil. 1.75 to 2.25	36.16 to 37.16

Ferroalloys.—There is no improvement in the demand for ferromanganese, but the market for spiegeleisen is more active, sales of the latter amounting to about 225 tons having been recently made, with inquiries totaling about 150 tons still before the market. The quotation for the higher grade is $40 to $45, furnace, but in some cases circumstances are such that this price is shaded. Most if not all of the British producers are now on a basis of $100, seaboard, for ferromanganese, with the American producers willing to meet this level, but in the absence of any business an actual test of the market has not been made, though some say that $100, delivered, could be done. The nominal quotation of resale ferromanganese is about $95, but no transactions have been noted recently. The manganese ore market is lifeless, with quotations nominal at 35c. to 40c. per unit, seaboard. Imports of manganese ore in December were heavy at 59,248 tons, bringing the total for 1920 to 601,437 tons, or close to the war record of 1917, when they were 629,972 tons. Imports of ferromanganese in December were 5424 tons, bringing the total for the year to 59,254 tons, which is nearly 5000 tons per month, or the largest in several years. The 50 per cent ferrosilicon market is very quiet, with quotations at $92.50 to $95, delivered, the lower quotation applying to 100 tons or larger lots.

Finished Iron and Steel.—Quotations remain unchanged, but a buyer with a definite need should have no difficulty in getting on most forms of finished steel lower prices than those of the Industrial Board basis, that is, those asked by the Steel Corporation. It does not follow that lower prices are obtainable on all offerings or from all mills. If it happens that a particular mill could utilize in its operating schedules the particular kind and quantity of steel needed, the lower price could be obtained in this case. The immediate result would point to the independent steel makers all attempting to get enough business to run at least intermittently at a rate calculated to reduce, if not wipe out, overhead charges. Apparently the numerous signs of weakness are not indicative of an expectation that an immediate revival in buying is likely; instead the concessions are, as stated, to secure the definite lots of business in order to suit the conditions of mill operations at the moment. Not only does it appear that lower than the March, 1919, prices are obtainable, but also concessions from the lately established 2.50c., Pittsburgh, base for plates. A small lot of bars has been moved at a $2 drop, or at 2.25c., Pittsburgh. The Standard Oil Co. of New Jersey has closed for about 500 tons of tank steel. There is no new car business of importance in the market, except an export inquiry. New offerings of fabricated steel work include 100 tons for the Philadelphia & Reading; 300 tons for the United Electric Light & Power Co., New York; 500 tons for a highway bridge in South Carolina; 300 tons for a warehouse in Jersey City; 400 tons for a theater in Elizabeth and 400 tons for the New York Edison Co. in Greene Street. The awards include 300 tons for the Brooklyn Edison Co. to an unnamed fabricator; 900 tons for the Herald Square Printing Co., Thirty-seventh Street and Eighth Avenue, to the Hinkle Iron Co., and 250 tons for the Barber Asphalt Paving Co., Maurer, N. J., to the Levering & Garrigues Co.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.53c. to 2.73c.; plates, 2.78c. to 3.03c.; shapes, 2.63c. to 2.83c.; bar iron, flats, wider than 6 in., 3.23c., with half extras; light rounds, squares and flats, 3.73c., with full extras, and other sizes, 2.73c., with half extras.

Cast Iron Pipe.—The city of Wharton, N. J., rejected all bids for 1000 tons of pipe. Inquiries from private companies have been more numerous during the past week. We quote f.o.b. New York, as follows: 6-in. and larger, $63.30; 4-in., $73.30; 3-in., $83.30, with $4 additional for Class A and gas pipe.

Warehouse Business.—Light inquiry and a few small orders are reported by most warehouses. Prices seem to have settled down and few changes in quotations are reported. One dealer is now quoting as low as 4.70c. per lb. base on open-hearth spring steel and a Brooklyn warehouse continues to quote the equivalent of 5c. per 100 lb. less than the Carnegie Steel Co. on most items. A large manufacturer of cast iron pipe fittings has reduced the price about 10 per cent, causing a similar price change by some warehouses. Jobbers quote:

Lapwelded steel boiler tubes, 2-in. and 2¼-in., list; 2¼-in. to 3¼-in., 3 per cent off list; 3½-in. to 4½-in., 16 per cent off list.

Seamless steel boiler tubes, price in cents per ft.: 1¾-in., 26; 2-in., 25; 2¼-in., 29; 2½-in., 36; 2¾-in., 39; 3-in., 43; 3¼-in., 51; 3½-in., 55; 3¾-in., 60; 4-in., No. 10, 72; 4-in., No. 9, 85.

We quote other prices on page 428.

High Speed Steel.—Quotations continue nominal at $1.25 per lb. for 18 per cent tungsten high speed steel. Some makers report slightly better business this month consisting almost entirely of small orders of a few pounds.

Old Material.—The market is more normal in this one respect: Instead of the continual drop which had characterized the past few months, the number of price advances about balanced the price declines the past

week. Some bargains have been secured in No. 1 machinery cast, one New York broker having purchased at from $18.75 to $19, f.o.b. New York. Both inquiries and sales are few.

Buying prices per gross ton, New York, follow:

Heavy melting steel	$10.00 to $10.50
Rerolling rails	14.50 to 15.00
Relaying rails, nominal	45.00 to 47.50
Steel car axles	16.00 to 17.00
Iron car axles	30.00 to 31.00
No. 1 railroad wrought	15.00 to 15.50
Wrought iron track	10.50 to 11.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long	13.00 to 14.00
Light iron	5.00 to 6.00
Cast borings (clean)	8.50 to 9.00
Machine-shop turnings	8.00 to 8.50
Mixed borings and turnings	7.00 to 7.50
Iron and steel pipe (1 in. diam. not under 2 ft. long)	10.00 to 10.50
Stove plate	14.00 to 15.00
Locomotive grate bars	12.00 to 13.00
Malleable cast (railroad)	13.00 to 14.00
Old car wheels	18.00 to 19.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	$23.00 to $24.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	22.00 to 23.00
No. 1 heavy cast, not cupola size	12.00 to 13.00
No. 2 cast (radiators, cast boilers, etc.)	12.00 to 13.00

Boston

BOSTON, Feb. 8.

Pig Iron.—One local house reports a sale of 750 tons No. 2 Pennsylvania foundry iron, delivery during the next three or four months, at a price around $30, furnace. The Crane Co., Bridgeport, Conn., which during the previous week received bids, this week is reported to have bought 1200 tons, silicon 1.75 to 2.25, Eastern iron at about $28, furnace, from New York interests. No authentic statement regarding the sale is forthcoming. A local house sold 100 tons special analysis Pennsylvania iron, the price paid being of secondary importance to the buyer. Other sales of No. 2 plain and No. 2 X Buffalo, eastern Pennsylvania and Virginia resale iron are reported at $29 to $30, furnace, the total approximating 300 to 400 tons, so that a grand total of 2300 to 2400 tons of foundry iron has been placed in New England this week, by far the best showing made in a long time. The Putnam Machine Works, Fitchburg, Mass., instead of 200 tons, now wants 100 tons, silicon 1.75 to 2.25, with special sulphur, phosphorus and manganese analysis. A textile machinery interest will consider a small tonnage of Buffalo No. 2 X iron at $28 furnace base, but the supply of Northern iron available at less than $30 furnace base has fallen to small proportions. In fact, resale iron of all kinds is growing scarcer. For the first time in many weeks Alabama iron is offered on this market at $30 furnace base. All foundry iron interests appear less insistent on securing regular differentials. Delivered pig iron prices follow:

East. Penn., silicon 2.25 to 2.75	$34.31 to $37.31
East. Penn., silicon 1.75 to 2.25	33.06 to 36.06
Buffalo, silicon 2.25 to 2.75	35.21 to 36.71
Buffalo, silicon 1.75 to 2.25	33.96 to 35.46
Virginia, silicon 2.25 to 2.75	36.83 to 40.83
Virginia, silicon 1.75 to 2.25	35.58 to 39.58
Alabama, silicon 2.25 to 2.75	41.90
Alabama, silicon 1.75 to 2.25	40.66

Coke.—The demand for foundry coke continues limited, inasmuch as activity among the foundries is still very spotty. An excellent grade of Connellsville coke is freely offered on this market at $6 ovens or $12.20 delivered, as against the New England Coal & Coke Co.'s delivered price of $13.60, and the Providence Gas Co.'s price of $7.50 Connellsville oven base. Foundry coke produced in this section of the country, in large tonnages, can be purchased at $6.50 Connellsville oven base, however. The producers here are giving most of their attention to domestic coke, for which there has been a good demand, owing to the high cost of anthracite.

Warehouse Business.—A slight increase in the demand for iron and steel is noted by warehouses, but the market is far from active. Local mill representatives report hand-to-mouth buying from manufacturing interests, but practically none from warehouses, due to large stocks. One of the leading warehouses has 13,793 more blue annealed sheets on hand than it had during the latter part of 1919, 1520 less formed sheets, 1036 more soft steel plates, 48 more fire box plates and 539 less pieces of siding. It is carrying a total of 6586 tons of other materials, or 1266 tons more than it was in the last quarter of 1919. The condition of stocks carried by other warehouses is similar. Local jobbing prices on cut nails have been reduced to a $5.75 per keg basis.

Jobbers now quote: Soft steel bars, $3.63 per 100 lb. base; flats, $4.50 to $4.85; concrete bars, $3.63 to $3.75; tire steel, $5 to $5.50; spring steel, open hearth, $6.50; crucible, $12; steel bands, $4.33 to $5.25; steel hoops, $5; toe calk steel, $7; cold rolled steel, $5.25 to $6; structural, $3.63 to $4.25; plates, $3.93 to $4.32; No. 10 blue annealed sheets, $5.20; No. 28 black sheets, $6.05; No. 28 galvanized sheets, $7.40; refined iron, $3.75 to $5.50; best refined, $5.50; Wayne, $8.50; band iron, $4.58; hoop iron, $5; Norway, $12.

Old Materials.—Certain old material houses profess to see slightly more interest shown by foundries in machinery cast, but the market is still quiet and prices unsettled. One 100-ton inquiry for No. 1 cast is reported. Car lots of selected No. 1 cast sold this week at $26 delivered, but the best that can be done on the ordinary run of stock is $23 delivered, and the local yard price is around $20 or $21. Small tonnages of No. 2 cast at $20.50 delivered are reported sold. Offers for No. 1 heavy melting steel have been made on this market at $11 and $11.50, and the market has stiffened as a result. No. 1 railroad wrought, on the other hand, sold at $15 and $16, which represents a drop of about $1. Portland, Me., interests are in the market for shafting and steel street car axles at $19. A small tonnage of car wheels sold at $22 to $23 delivered, which brings the local yard price down to around $20 to $21. Local yard prices on old material follow:

No. 1 heavy melting steel	$11.00 to $11.50
No. 1 railroad wrought	15.00 to 16.00
No. 1 yard wrought	13.00 to 14.00
Wrought pipe (1-in. in diameter, over 2 ft. long)	10.00 to 10.50
Machine shop turnings	7.00 to 8.00
Cast iron borings, rolling mills	7.00 to 8.00
Cast iron borings, chemical	9.00 to 10.00
Heavy axle turnings	9.00 to 9.50
Blast furnace borings and turnings	4.50 to 5.00
Forged scrap and bundled skeleton	7.00 to 8.00
Street car axles, steel	19.00 to 20.00
Car wheels	20.00 to 21.00
Machinery cast	20.00 to 21.00
No. 2 cast	18.00 to 19.00
Stove plate	15.00 to 16.00
Railroad malleable	15.00 to 16.00
Rerolling rails	12.00 to 13.00

Buffalo

BUFFALO, Feb. 8.

Pig Iron.—Both in volume of inquiry and actual orders improvement is noted over the preceding week. Some observers do not regard this flurry as an indication of any permanent improvement in the trade, but rather as a temporary condition. Orders for 5500 tons are reported booked by one producer. The usual price of $32 on tonnages under 1000 tons and $30 on quantities over that figure prevailed. This same interest reports inquiries aggregating 35,000 tons now under consideration. A sale of 300 tons at $32 was reported by a sales agency. Car wheel manufacturers are said to be ready to come into the market, and considerable business is expected to develop from this source. Another interest sold approximately 800 tons at $30. No sales at less than $30 have been reported.

We quote f.o.b. Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.	$33.00 to $35.00
No. 2X foundry, 2.25 to 2.75 sil.	31.25 to 33.25
No. 2 plain, 1.75 to 2.25 sil.	30.00 to 32.00
Basic	31.00 to 32.00
Malleable	32.00 to 33.00
Lake Superior charcoal	40.64

Finished Iron and Steel.—Perceptible improvement is seen in local conditions. Mill operation has increased; tonnages booked and inquiries have slightly increased. The process of reducing wages is still going on. One local interest is reported to have effected total cuts of 30 per cent since the beginning of the year. There is an attitude of waiting for additional wage cuts in the hope that prices will come down in consequence. There is considerable work reported in preparation in architects' offices ready to be offered when prices reach the bottom. Demand for wire products and cold-finished steel is light. One company will start a 10-in. bar mill this week after two months inactivity.

Full capacity will be maintained to clean up on accumulated orders for stock billets. Local fabricators are interested in a large building to be erected by the Parke, Davis Co., Detroit druggists. A bar maker reports a better outlook than observed in 30 days. Orders justify the statement. Within the week one company has started a structural mill and a plate mill, one shape mill and a bar mill. It now has six mills in operation.

We quote prices f.o.b. Buffalo as follows: Structural shapes, 3.60c.; plates, 3.80c.; plates, No. 8 gage, 4.65c.; soft steel bars and shapes, 3.50c.; hoops, 4.60c.; blue annealed sheets, No. 10 gage, 4.70c.; galvanized steel sheets, No. 28 gage, 7.10c.; black sheets, No. 28 gage, 5.75c.

Old Material.—One buyer is said to be in the market for heavy melting steel, but will not buy at existing prices. No sales of importance have been reported.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$15.00 to $16.50
Hydraulic compressed	13.00 to 14.00
Low phos., 0.04 and under	22.00 to 23.00
No. 1 railroad wrought	20.00 to 21.00
No. 1 machinery cast	20.00 to 21.00
Iron and steel axles	30.00
Car wheels	20.00 to 21.00
Railroad malleable	16.00 to 17.00
Machine shop turnings	11.00 to 12.00
Heavy axle turnings	14.50 to 15.50
Clean cast borings	11.00 to 12.00
Iron rails	23.00 to 24.00
Locomotive grate bars	15.00 to 16.00
Stove plate	17.00 to 18.00
Wrought pipe	14.00 to 15.00
No. 1 busheling	13.00 to 14.00
Bundled sheet stampings	10.00 to 11.00

Birmingham

BIRMINGHAM, ALA., Feb. 8.

Pig Iron.—At the close of the first week in February the $30 level that applied to small lots for prompt shipment had been shaded in several instances to as low as $28 and even $27.50. The lower price was quoted more particularly to consumers still having $40 and $42 iron coming to them and was made applicable to non-competitive as well as competitive territory. Withal there is a pronounced disposition not to weaken at all points and makers are going to be keen to come back to $30 as a minimum just so soon as there is real buying. There was a well-founded report of a quotation of $28 on a 1000-ton lot for the Pacific coast. One maker has booked the make of the one active stack, having taken on about 4000 tons at $30 following a like amount at $35, and is now booking on a range from $28 to $30. Two important interests remain out of the market by quoting $38, and one of them, a large foundry producer, gives every sign of a firm intention to keep out until the big buyers sound for large tonnage. The pipe interests still talk about $25 iron, but there is an apparent disposition to stiffen rather than make further recessions. The make is still confined to four merchant stacks on foundry, six of the Tennessee company on basic, two on foundry and one on ferromanganese and one of the Gulf States Steel Co. on basic. The January production was the lowest since April, 1919, but not so low as that month, owing to normal operations by the Tennessee company, which has the largest furnaces.

We quote per gross ton f.o.b. Birmingham district furnace, the Tennessee company included, as follows:

Foundry, sil. 1.75 to 2.25	$27.50 to $30.00
Basic	26.50 to 29.00
Charcoal	40.00

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Co. resumed in a small way at the Anniston plant on Monday, and is operating in similar manner at North Birmingham and Chattanooga. The National Cast Iron Pipe Co. and the American Cast Iron Pipe Co. are understood to be operating at about 50 to 60 per cent. Some pipe is going to stock. Operations of sanitary pipe shops at Gadsden are fairly well under way again after wage reductions, and brokers are taking on stocks. The scale has been reduced to $60. Water and gas pipe still rule nominally at $55, but that price is not bringing much business.

Coal and Coke.—Coke is stronger, but standard foundry rules still at $8 and $9. Foundries such as stove plants are taking larger quantities of coke.

Old Material.—The scrap dealers are not making any special effort to sell at present prices, preferring to wait a while until mills are in greater need of material. Very little of any kind is moving.

We quote per gross ton, f.o.b. Birmingham district yards, prices to consumers, as follows:

Old steel rails	$13.00 to $13.50
No. 1 heavy steel	12.50 to 13.00
No. 1 cast	18.00 to 19.00
Car wheels	18.00 to 19.00
Tramcar wheels	16.00 to 17.00
No. 1 wrought	15.00 to 16.00
Stove plate	12.00 to 12.50
Cast iron borings	5.00 to 6.00
Machine shop turnings	5.00 to 6.00

St. Louis

ST. LOUIS, Feb. 8.

Pig Iron.—While there is here and there an inquiry, more to get a price than for the purchasing of iron, there is a continuance of the dullness which has prevailed in the pig iron market for several months. Occasional sales of small lots are made, but there is no general market established. While prices are mentioned as being around $29 to $30 furnace, there is no definite quotation. Most of the furnaces represented in this section are at present mostly concerned with getting the iron delivered which they sold around $42 per ton, Birmingham.

Coke.—Very little is being done in coke, whether it be prompt or future shipment, and prices are about as last reported, chiefly because there have been no transactions of consequence to establish prices at this point either in beehive oven or byproduct coke.

Finished Iron and Steel.—No renewal of activity is reported in the finished products market either on contracts or out of warehouse. Dullness is reported from both interests and on contract business the readjustment work is still going on.

For stock out of warehouse we quote as follows: Soft iron bars, 3.57½c.; soft steel bars, 3.57½c.; structural material, 3.67½c.; tank plates, 3.87½c.; No. 10 blue annealed sheets, 4.77½c.; No. 28 black sheets, cold rolled, one pass, 5.85c.; No. 28 galvanized sheets, black sheet gage, 7.20c.

Old Material.—The market shows no improvement. Even the dealers have ceased to trade among themselves while consumers are entirely out of the market, and railroad lists are almost going begging with little or no takings except at lowest prices giving speculative possibilities to dealers to lay down in yard. Lists out include 1110 tons from the Wabash, closing Tuesday; Missouri, Kansas & Texas, 1200 tons, closing Monday; Cotton Belt, 400 tons, closing last Saturday; Kansas City Southern, 250 tons, closing Feb. 14; Pennsylvania 3900 tons, closing Tuesday; Frisco 2700 tons, closing Wednesday.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails	$19.50 to $20.00
Old steel rails, rerolling	16.00 to 16.50
Old steel rails, less than 3 ft.	15.00 to 15.50
Relaying rails, standard section, subject to inspection	35.00 to 40.00
Old car wheels	20.00 to 20.50
No. 1 railroad heavy melting steel	14.00 to 14.50
Heavy shoveling steel	12.00 to 12.50
Ordinary shoveling steel	11.00 to 11.50
Frogs, switches and guards cut apart	14.00 to 14.50
Ordinary bundled sheet	6.00 to 6.50
Per Net Ton	
Heavy axle and tire turnings	7.00 to 7.50
Iron angle bars	17.00 to 17.50
Steel angle bars	12.50 to 13.00
Iron car axles	29.00 to 29.50
Steel car axles	18.00 to 18.50
Wrought arch bars and transoms	19.00 to 19.50
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	13.00 to 13.50
Railroad springs	12.50 to 13.00
Steel couplers and knuckles	12.50 to 13.00
Locomotive tires, 42 inches and over, smooth inside	10.00 to 10.50
No. 1 dealers' forge	9.00 to 9.50
Cast iron borings	7.50 to 8.00
No. 1 busheling	12.50 to 13.00
No. 1 boilers, cut to sheets and rings	8.00 to 8.50
No. 1 railroad cast	18.50 to 19.00
Stove plate and light cast	16.00 to 16.50
Railroad malleable	12.00 to 12.50
Agricultural malleable	12.00 to 12.50
Pipes and flues	10.50 to 11.00
Railroad sheet and tank	8.00 to 8.50
Railroad grate bars	12.00 to 12.50
Machine shop turnings	5.00 to 5.50
Country mixed	9.00 to 9.50
Uncut railroad mixed	10.50 to 11.00
Horseshoes	16.50 to 17.00
Railroad brake shoes	12.00 to 12.50

Cleveland

CLEVELAND, Feb. 8.

Iron Ore.—Few independent consumers are taking ore from docks, and shipments from Lake Erie docks during January showed a sharp falling off as compared with December. Shipments during the month were 725,294 gross tons as compared with 1,251,315 tons during December. However, the January movement was much better than during the same month a year ago when the car shortage and severe weather interfered with shipments, the movement during January, 1920, being only 430,104 tons. The balance on docks is still somewhat less than a year ago, being 9,217,089 tons on Feb. 1 as compared with 9,661,466 tons on the same date last year.

We quote delivered lower lake ports: Old range Bessemer, $7.45; old range non-Bessemer, $6.70; Mesaba Bessemer, $7.20; Mesaba non-Bessemer, $6.55.

Pig Iron.—There is a little activity in foundry iron for prompt shipment, mostly in car lots, and prices have settled down to $29 and $30 for No. 2 foundry. Valley furnaces are quite generally quoting this iron at $29, but one Valley producer reports some car-lot sales at $30. Lake furnaces, so far, have not shaded the $30 price. However, they must go lower on inquiries from outside points to meet Valley competition. A Cleveland broker has purchased 27,000 tons of basic iron in stock piles at Valley steel plants and is offering this at $28 per ton. We note a sale of 100 tons of malleable iron at $29, or $1 a ton below the recent price, to a northern Ohio foundry. New inquiries are pending for 2000 tons of foundry iron, including one lot of 500 tons wanted by a northern Ohio consumer. The only development in the Southern iron market is the offering of yard stocks by a Chattanooga furnace at $30 furnace, for No. 2, or equivalent to $28.80 Birmingham. Some of the furnace companies report improvement in shipping orders the past few days, but they are uncertain whether this is a permanent improvement or only a spurt of orders at the first of the month. The Upson Steel Co., Cleveland, blew out its blast furnace Monday, and both of the Cleveland furnaces of the Otis Steel Co. are scheduled to go out of blast this week.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c. switching charge for local iron, a $1.96 freight rate from Valley points, a $3.36 rate from Jackson and $6.67 from Birmingham:

Basic	$29.36 to $31.96
Northern No. 2 fdy., sil. 1.75 to 2.25	30.56
Southern fdy., sil. 2.25 to 2.75	35.42 to 37.92
Ohio silver, sil. 8 per cent	46.86
Standard low phos., Valley furnace	44.00

Finished Iron and Steel.—The break in steel prices long expected by many buyers and sellers has come with price cuts of from $5 to $8 per ton below the Steel Corporation's prices. The first move toward an open market and what may develop into a price war between some of the independent mills was made by the Midvale Steel & Ordnance Co., but a Buffalo mill has become active in meeting the new market situation in respect to steel bars. Some of the independent mills so far are adhering to recent prices, not having decided on their price policies, but others, while not attempting to meet the new prices, are making some concessions. Steel bars during the past day or two have been quoted freely at 2.10c., at which some business has been taken, and a late quotation of 2c. is reported. Minimum prices reported so far are 2.25c. on plates and 2.20c. on structural material. It is expected that the price reductions will apply to all forms of semi-finished and finished steel down to nails and wire, but so far new prices on some of the items have not come out. Mills that are making the low prices have not adopted definite fixed prices, but are after business at the best prices they can get to keep their mills running. While the price reductions have brought out orders aggregating several thousand tons, they are not expected to stimulate buying to any great extent in view of the fact that the steel requirements of most consumers at present are light. It is strictly a buyers' market and, as many sellers have contended would happen should prices be cut, consumers generally will probably withhold orders, waiting for the market to reach the bottom and become stabilized. Lower prices on structural material are expected eventually to stimulate building activity, but to have a temporary effect of holding up contracts until the market settles down. On an inquiry from the City of Cleveland for 700 tons for a hospital building, the King Bridge Co. was the low bidder. New prices have not yet come out on hard steel reinforcing bars, but rerolling mills are expected to meet soft steel bar prices.

Sheets.—Sheet prices are tending toward lower levels, and the price reductions in other finished lines are expected to result in a more rapid readjustment of prices on all grades of sheets. We note sales of black sheets at 4.25c. and blue annealed sheets at 3.40c., a $3 reduction, these sales being significant owing to the fact that they were made by mills that until the past day or two have maintained regular prices. Some look for a $7 a ton reduction on sheets, as that concession is being made by a jobber who has purchased surplus mill stocks. For some time plate mills have been selling light plates in the blue annealed gages on the plate basis or 3.18c. for No. 10. The volume of sheet business has improved somewhat, but no new demand has yet developed from the automobile field. Canton mills that have been shut down for several weeks have resumed operations in part.

Cleveland warehouses quote steel bars at 3.30c. to 3.34c.; plates, 3.60c. to 3.64c., and structural material, 3.40c. to 3.44c.; No. 9 galvanized wire, 4.70c.; No. 9 annealed wire, 4c.; No. 28 black sheets, 5.60c.; No. 28 galvanized, 6.95c.; No. 10 blue annealed, 4.55c.

Bolts, Nuts and Rivets.—The demand for bolts and nuts continues very light, being limited to small lot orders to fill in stocks. Some of the manufacturers are operating at only about 50 per cent of capacity. Following a $2 price reduction on rivets made by a Pittsburgh manufacturer, Cleveland rivet makers are meeting in competition the lower prices, but have not formally reduced their prices. The new prices are 3.90c. Pittsburgh for structural rivets and 4c. for boiler rivets.

Small rivets, 60 and 10 off. Small machine bolts, rolled thread, 60 and 10 and 10 off. Cut threads, 60 and 10 off. Larger and longer, 60 off. Small carriage bolts, 60 off. Cut thread and larger and longer, 50 and 10 off. Lag bolts, 65 off. Plow bolts, 50, 10 and 5 off. Machine bolts, c.p.c. and t. nuts, small, 45, 10 and 10 off. Longer and larger, 40, 10 and 5 off. Hot pressed blank nuts, $3.25 off. Same tapped, $3 off. C.p.c. and t. nuts, blank, $3.10 off. Same tapped, $2.85 off. Stove bolts, 75, 10 and 10 off. Same in packages, 2½ per cent additional. Tire bolts, 60, 10 and 10 off.

Coke.—Prices are 50c. a ton lower on some standard makes of foundry coke, which are now quoted at $6.50 per net ton at oven for prompt shipment, and $7 for contract. There is virtually no demand.

Old Material.—The market shows no change except that it is weaker and prices on some grades have declined. Additional sales of small lots of heavy melting steel scrap for Sharon delivery are reported at $16.50, but with this exception no sales have been made to mills and price quotations for the most part have become dealers' prices owing to the absence of transactions between dealers and consumers. The production of scrap has fallen off so sharply that little is being offered to dealers, but some of this is being purchased at very low prices. Machine shop turnings have sold as low as $5 per ton.

Per Gross Ton	
Heavy melting steel	$14.00 to $14.25
Steel rails, under 3 ft	17.00 to 17.50
Steel rails, rerolling	17.00 to 18.00
Iron rails	17.00 to 17.50
Iron car axles	33.00 to 35.00
Low phos. melting	16.50 to 17.00
Cast borings	11.00 to 11.50
Machine shop turnings	6.00 to 7.00
Mixed borings and short turnings	10.00 to 10.50
Short turnings for blast furnaces	10.00 to 10.50
Compressed steel	9.75 to 10.25
Railroad wrought	15.50 to 16.00
Railroad malleable	17.50 to 18.00
Steel axle turnings	11.00 to 11.50
Light bundled sheet stampings	6.00 to 7.00
Drop forge flashings over 10 in	8.00 to 9.00
Drop forge flashings under 10 in	9.00 to 10.00
No. 1 cast	20.00 to 21.00
No. 1 busheling	9.00 to 10.00
Railroad grate bars	15.00 to 16.00
Stove plate	15.00 to 16.00
Cast iron car wheels	19.00 to 20.00
Pipes and flues	9.00 to 9.50

The Austin Machinery Corporation of Louisiana, Inc., has been capitalized at $100,000, preferred stock, and $200,000, common stock, under the laws of the State of Louisiana, as sole distributor for Louisiana, Arkansas, Mississippi and Tennessee, of the products of the Austin Machinery Corporation, manufacturer of contractors' equipment.

Cincinnati

CINCINNATI, Feb. 8.

Pig Iron.—An inquiry for 5000 tons of basic iron for prompt shipment has been received from a steel plant in this district and it is expected that an order for at least part of the tonnage will be placed. Outside of this inquiry, the market is quiet, though one inquiry for 500 tons for a Southern melter is still outstanding. A central Ohio melter is inquiring for 100 tons of Northern iron and a few carload lots are being quoted on. The largest sale reported last week was one of 200 tons, Northern foundry, which went at $32, Ironton, furnace, for the base grade. Carload lots of Southern iron have been sold at $28 and $30, Birmingham base, and in view of a recent confirmed sale of 750 tons of Southern iron to a Kentucky melter at $27.50, Birmingham, there is no doubt that a round tonnage can still be placed at that figure. In the North $29, Valley basis and $32, Ironton basis, represent the furnace asking prices, though some resale iron from southern Ohio is reported to have been offered at $29. Resale iron is being steadily eliminated as a market factor, though there are still some cases where foundries having iron on yards are willing to take their losses in order to turn their iron into money. Foundries in the territory adjacent to Cincinnati employing union members have been closed down following the failure to come to an agreement on the wage scale for the next year. Employers desired a reduction of 20 per cent in wages, extension of the piece work system and elimination of time and a half for time worked over eight hours. This the union refused to agree to. Stove shops are not affected. Miami furnace at Hamilton was blown out last week, leaving one furnace, a Marting stack at Ironton, operating in the southern Ohio district. Carload sales of prompt shipment coke continue as the only market activity.

Based on freight rates of $4.50 from Birmingham and $2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$32.00 to $34.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	33.75 to 36.25
Ohio silvery, 8 per cent sil	43.52 to 46.02
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	32.52 to 34.52
Basic northern	32.52
Malleable	33.52 to 36.02

Finished Material.—The market is quiet, though there is a little more interest being shown by sheet buyers. Brokers have offered sheets in this market the past week at $5 a ton under the regular schedules, galvanized being offered at 5.45c. and black at 4.10c. Plates are also being offered at 2.50c., Pittsburgh, by a few of the smaller companies. The bar market is quiet, though it is reported that some inquiries have been received for reinforcing bars for building projects to be released this spring. These inquiries are more or less contingent, however. The wire market is showing signs of returning life, several orders for carload lots of woven wire fencing having been received. Nail orders, consisting of several carloads, are reported by one interest. Some business in light rails and track fastenings is reported from mining companies, which are taking advantage of the dull period to put their properties in condition for the spring and summer rush. In this connection some of the local frog and switch companies are working full time getting out orders for coal mining companies in the Kentucky and West Virginia fields. In the structural field, there is practically no activity at present, though fabricators report prospects good for increased building activity within the next couple of months.

Warehouse Business.—Warehouse business continues to show a slight improvement in the size of orders placed, but as a general thing only about 50 per cent of a normal business is being conducted. Prices are generally unchanged, local jobbers quoting as follows:

Iron and steel bars, 3.58c. base; shapes, 3.68c. base; hoops and bands, 3/16 in. and lighter, 4.28c.; plates, 3.88c. base; reinforcing bars, 3.65c.; cold-rolled rounds, 1½ in. and over, 5.20c.; under 1½ in. rounds, flats, squares and hexagons, 5.70c.; No. 10 blue annealed sheets, 4.78c. base; 28-gage black sheets, 6c. base; 28-gage galvanized sheets, 7c. base; wire nails, $4 per keg, base.

Coke.—Connellsville furnace coke is quoted at $5 and foundry at $6, with the best grades of foundry at $7.50 for prompt and future. Wise County foundry is off $1, being quoted at $8 and furnace at $7. New River foundry is unchanged at $11.

Old Material.—The scrap market remains dull. There was a flurry in buying by dealers for a couple of days last week, and prices went up slightly, but they quickly dropped back to former levels. There is practically no demand from foundries and dealers report further suspension of shipments from steel mills.

We quote dealers' buying prices:

Per Gross Ton	
Bundled sheets	$7.50 to $8.50
Old iron rails	16.50 to 17.50
Relaying rails, 50 lb. and up	40.50 to 41.50
Rerolling steel rails	12.50 to 13.50
Heavy melting steel	11.50 to 12.50
Steel rails for melting	11.50 to 12.50
Car wheels	16.50 to 17.50
Per Net Ton	
No. 1 railroad wrought	11.50 to 12.50
Cast borings	6.50 to 7.00
Steel turnings	4.00 to 4.50
Railroad cast	15.50 to 16.50
No. 1 machinery	15.50 to 16.50
Burnt scrap	8.50 to 9.50
Iron axles	23.00 to 23.50
Locomotive tires (smooth inside)	11.00 to 12.00
Pipes and flues	7.50 to 8.00
Malleable cast	10.50 to 11.00
Railroad tank and sheet	6.50 to 7.00

Philadelphia

PHILADELPHIA, Feb. 8.

The Midvale Steel & Ordnance Co. on Friday last decided to break away from the Steel Corporation level of prices on plates, shapes and bars, and was closely followed by the Youngstown Sheet & Tube Co., which announced a reduction on sheets. Other independent steel companies are watching the situation closely, and there is every indication that there will be a general abandonment of Industrial Board prices on practically all products. Naturally, there is speculation as to what policy the Steel Corporation will follow in the face of deep cuts by independent competitors. In the absence of any definite information, the trade generally accepts the conclusion that the leading interest will make no price changes, at least for first quarter.

While there have been reports of quotations on steel bars as low as 2c., Pittsburgh, the authorized quotations of the Midvale company are 2.15c. on steel bars; 2.25c. on structural shapes and 2.40c., all Pittsburgh, on plates. The Midvale company has not announced any horizontal cut in prices, but instructed its district sales managers to feel out the market to determine, if possible, at what basis some attractive business could be brought out. With the principal steel-consuming industries, such as building construction, shipbuilding, locomotive and car building and farm implement manufacturing in a condition of extreme dullness, it is doubted that there will be any marked response to the price reduction. The attitude which the steel trade now takes, however, is one of complacence, the thought being that reductions ultimately had to come and that now is as good a time as any for the liquidation to proceed to a point that will actually induce large projects to go ahead.

Though the week's reductions affect only plates, shapes, bars and sheets, it is expected that other products, with the probable exception of heavy rails, will also be reduced. In fact, there has been cutting on light rails by at least one independent producer to meet the competition of mills re-rolling from old rails. The minimum reported on light rails is 2.15c., Pittsburgh. Other mills, including Midvale, continue to quote 2.45c., Pittsburgh.

The rate of improvement in demand for steel and pig iron, noted during the last two weeks of January, has not been maintained in the first week of February. The Cambria plant of the Midvale company was started up last week with only about two or three weeks business ahead, and the reductions by this company are primarily an effort to round up enough business to maintain operations continuously.

Pig Iron.—While there are reports of sales of

foundry iron below $30, furnace, these are not confirmed, and apparently eastern Pennsylvania furnaces are making an effort to maintain the $30 quotation, which they represent is just about cost of production. Only seven eastern Pennsylvania furnaces are in blast, with 26 out, and in Virginia there are three in blast and 14 out. Sales in the past week total a few thousand tons, mostly foundry grades. There was one sale of 1000 tons of No. 2 plain for prompt delivery, at $30, furnace, and smaller lots have been sold at the same price. A sale of 150 tons of gray forge iron was made at $29.50, furnace. There is no demand for basic, and while $30, furnace, appears as the nominal quotation, it is not denied that a sizable tonnage could be bought at substantially less.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

East. Pa. No. 2 plain, 1.75 to 2.25	$30.84 to $31.54
East. Pa. No. 2X, 2.25 to 2.75 sil.	32.09 to 32.79
Virginia No. 2 plain, 1.75 to 2.25 sil.	37.74 to 38.74
Virginia No. 2X, 2.25 to 2.75 sil.	38.99 to 39.99
Basic deliv. Eastern Pa.	31.40
Gray forge	30.90 to 31.26
Standard low phos. (f.o.b. furnace)	41.50
Malleable	31.90 to 32.40
Copper bearing low phos. (f.o.b. furnace)	40.00

Coke.—Sales of carload lots of foundry coke have been made during the past week at prices ranging from $5.50 to $7.25, Connellsville. The low price was made on an inferior grade of coke, the better grades bringing from $6.50 to $7.25. Furnace coke is obtainable at $4.75, Connellsville, for prompt shipment and it is intimated that first half contracts could be made at this price, but there is no interest in contract tonnage.

Ferroalloys.—Domestic producers of ferromanganese will now quote $100, delivered. British producers, though quoting $100, seaboard, would probably meet this price. Spiegeleisen has been quoted at $38 and $39, furnace, without getting the business.

Plates.—The announcement that the Midvale company has abandoned the 2.65c. plate price was startling news to Eastern producers, whose high costs leave them in a quandary as to how they can compete on this basis. Nearly all mills, however, would be willing to leave the question of costs out of reckoning temporarily if they could stimulate enough business to maintain a fair rate of operations, which does not appear a promising prospect just now. The Midvale price is nominally 2.40c., Pittsburgh, but with the abandonment of the effort to adhere to the Steel Corporation level there is every indication that the price may go lower. We quote sheared plates, ¼ in. and heavier, at 2.40c. to 2.65c., Pittsburgh.

Structural Material.—There is a dearth of orders for shapes, and it is too early to determine whether the new price quoted by the Midvale company, 2.25c., Pittsburgh, will bring out any business. No building projects of importance have definitely come into this market, but several now in architects hands may come out soon. We quote plain material at 2.25c. to 2.45c., Pittsburgh.

Bars.—There are no important inquiries for bars in this market, but in other districts some business is in prospect. The new price announced by the Midvale company is 2.15c., Pittsburgh. Iron bars are quoted at 2.35c., Pittsburgh, but probably this could be shaded on desirable orders.

Sheets.—The reduction by the Youngstown Sheet & Tube Co. was quietly announced to buyers in this district. A few orders are said to have been placed at the new quotations. Eastern mills have not met the Youngstown quotations.

Semi-Finished Steel.—Forging billets are still quoted by an Eastern mill at $50, Pittsburgh, but no business has resulted. Rerolling billets are obtainable at $43.50, Pittsburgh.

Warehouse Business.—A slight improvement in buying from local warehouses is reported. The local trade, while generally quoting the prices shown below, has decided upon a $3 a ton reduction to all consumers outside of the immediate Philadelphia district to compensate for the freight rate on such shipments, local prices including cartage to buyer's plant. We quote:

Soft steel bars and small shapes, 3.60c.; iron bars (except bands), 3.60c.; round edge iron, 3.90c.; round edge steel, iron finish, 1½ in. x ½ in., 3.90c.; round edge steel, planished, 4.65c.; tank steel plates, ¼-in. and heavier, 3.90c.; tank steel plates, 3/16-in., 4.20c.; blue annealed steel sheets, No. 10 gage, 4.80c., light black steel sheets, No. 28 gage, 5.95c.; galvanized sheets, No. 28 gage, 7.30c.; square twisted and deformed steel bars, 3.70c.; structural shapes, 3.70c.; diamond pattern plates, 5.65c.; spring steel, 6.50c.; round cold-rolled steel, 5.35c.; squares and hexagons, cold-rolled steel, 5.85c.; steel hoops, No. 13 gage and lighter, 4.65c.; steel bands, No. 12 gage to 3/16-in. inclusive, 4.30c.; iron bands, 5c.; rails, 3.60c.; tool steel, 16c.; Norway iron, 10c.; toe steel, 6c.

Old Material.—The market is stagnant and there are no price changes of importance. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$14.50 to $15.00
Steel rails, rerolling	18.00 to 19.00
No. 1 low phos., heavy 0.04 and under	23.50 to 24.00
Car wheels	25.00 to 26.00
No. 1 railroad wrought	20.00 to 21.00
No. 1 yard wrought	16.00 to 18.00
No. 1 forge fire	13.00 to 13.50
Bundled skeleton	13.00 to 13.50
No. 1 busheling	15.00 to 16.00
No. 2 busheling	11.00 to 12.00
Turnings (short shoveling grade for blast furnace use)	13.00 to 13.50
Mixed borings and turnings (for blast furnace use)	12.00 to 12.50
Machine-shop turnings (for rolling mill and steel works use)	13.00 to 13.50
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for rolling mills)	14.00 to 15.00
Cast borings (for chemical plants)	15.00 to 16.00
No. 1 cast	23.50 to 24.50
Railroad grate bars	17.00 to 18.00
Stove plate (for steel plant use)	16.50 to 17.00
Railroad malleable	16.00 to 17.00
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.50
Iron car axles	30.00 to 31.00
Steel car axles	25.00 to 26.00

RAILROAD RELIEF BILL

House Approves Plan to Amend Transportation Act to Permit Payments

WASHINGTON, Feb. 8.—Brought up under special rule, the Winslow bill, to amend the transportation act so as to enable the Secretary of the Treasury to make payments to the railroads upon issuance of certificates by the Interstate Commerce Commission, was passed this afternoon by the House without a record vote.

One amendment, offered by Representative Greenwald, Pennsylvania, which provides that railroad estimates in making final settlements shall be prima facie, but not conclusive evidence, instead of binding in settlements, was adopted. An effort will be made to get the measure through the Senate at an early date.

Senator LaFollette, Wisconsin, has introduced the proposed amendment to the transportation act providing no payment of money shall be made to any railroad until determined by the Interstate Commerce Commission that it has not since March 1, 1920, paid unreasonable prices for supplies or unreasonable salaries to officers or directors. Attempts to get through this amendment, which promise to be unsuccessful, may delay passage of the Winslow bill.

The bill's passage by the Senate would mean that railroads could be allowed partial payments on obligations accruing to them through guarantees during the time of Federal control and the guaranty period from March 1 to Sept. 1, 1920. These obligations approximate $367,000,000 and payments were held up under the ruling of Comptroller of the Treasury Warwick, who maintained that the balance could not be paid until a final settlement is made with the various railroads. The ruling was tested in the Supreme Court of the District of Columbia in a mandamus proceedings brought by Grand Trunk Western Railroad to recover Government obligations owing it. The court sustained the ruling of the Comptroller of the Treasury and the case was taken by the Grand Trunk Western Railroad to the District Court of Appeals where it is being argued to-day. If the Winslow bill passes, this will be unnecessary.

In view of the fact that purchases of iron and steel and other supplies by the railroads, together with the payment by them of heavy obligations they owe for equipment, are dependent upon settlements with the Government, the latter are vitally important, affecting the entire economic situation of the country and reacting alike on all industry, commerce, trade, agriculture and finance.

FOREIGN RAILROAD BUYING

Rail Inquiries from Sweden and British Colonies —Spain Considering 90 Locomotives

NEW YORK, Feb. 8.—The recent 80-lb. rail inquiry from the Cape to Cairo Railroad in Africa was for 25,000 tons; this has now been increased to 40,000 tons. A short time ago a purchase of about 20,000 tons made by a railroad in Rhodesia, which is engaged in widening its gage and laying heavier rails than were formerly used. Since the conclusion of the treaty of Versailles and the changes in colonial control in Africa from German to British hands, numerous improvements in transportation facilities have been projected. When the intended changes in gages and the construction of certain connecting links have been completed, the British will have a greatly improved transportation system. At present the railroads in the old German colonies are of various gages, ranging from 600 mm. to 1 m. and 1 m. 67 mm., while the standard British gage is 3 ft. 6 in. The rails now inquired for will probably be delivered in small shipments over a period of time.

Another inquiry from European sources is for between 10,000 and 15,000 tons of heavy, bullhead rails with accessories, from Stockholm, Sweden, for the Swedish State railroads. Bids also have been requested from Egypt for several thousand tons of 12-lb. rails and considerable activity is reported in railroad construction and changes in New Zealand. There is an inquiry for light rails for mine use, from the Johannesburg district. A contract was closed in the past week for 1500 tons of light rails for India.

Spain to Buy 90 Locomotives

Some small inquiries are being received from Europe and it is predicted that Spain will shortly be in the market for 90 heavy locomotives. Belgian works have recently taken a locomotive contract for Spain. At present, both Spain and Portugal are inquiring and placing some small orders for finished material. An inquiry for 800 50-ton, all-steel hopper and coke cars for the Indian State railroads has been issued by Perin & Marshall, 1107 Broadway, New York.

German and Belgian competition, particularly in European markets, is strong. An unknown British buyer recently placed an order for several thousand tons of ordinary commercial black and galvanized pipe with a Belgian producer at a price about 20 per cent under the American quotation. Another inquiry issued in the United States and also sent to Germany for bids would have totaled about $450,000 worth of seamless steel boiler tubes. The German quotation, however, was lower c.i.f., England, than the American bidder's price f.a.s. About 20,000 tons of rerolling billets for England are under negotiation. While the American bid is lower than the British, it is higher than the Belgian quotation, but an advantage is said to lie in the better quality of American steel.

Russia Buys German Locomotive Tires

It is reported that a contract has been entered into between Henschel & Sohn, Hattingen-am-Ruhr, Germany and a representative of the Russian Soviet, calling for 22,000 open hearth steel tires for locomotives, railroad cars and tenders. There is no bank guarantee, but the seller guarantees the material for one year after delivery. Shipments are to be made f.o.b. Baltic port or German-Polish boundary in 10-ton cargoes. Monthly payments covering 25 per cent of the total are to be made and 75 per cent of the value of each shipment will be paid when forwarded.

Krupp Works Adds New Manufactures

The Fried. Krupp A. G., is now reported to be equipped to make motor trucks of 4 to 5 tons capacity, equipped with 48-hp. Krupp motors; rapid operating 1 and 2-ton dump cars for coal handling; a new design of small automobile street sweeper; non-rusting and acid resisting steel surgical instruments; agricultural machinery, precision instruments, electric cranes, electromagnets, motors for spinning and paper mills, padlocks, motion picture projectors and cash registers.

Far Eastern Activity

The Far East shows some activity in small purchases of special material and a few large contracts. The New York branch of a British company recently shipped an order of bolts and nuts valued at about $5,000 to a buyer in India, and another has filled a small order for locomotive tubes, shipped to Harbin, Manchuria, to a firm of Russian engineers, who paid cash with the order. One of the foremost Japanese import and export houses in New York has closed a contract covering a heavy tonnage of fabricated material with the Yokahama Species Bank, Yokahama, Japan, and the Blaw-Knox Co., New York, has concluded negotiations for supplying approximately 6000 tons of steel transmission towers to the Nippon Electric Power Co., of Osaka. An inquiry, not yet in the market is expected from Japan for a tonnage of sheets and about 10,000 boxes of tin plate. This prediction is discounted in some quarters where it is pointed out that heavy stocks of tin plate and other material are still reported held in warehouses in Japan at low prices.

British and Continental Iron and Steel Prices

BRITAIN

Prices Per Gross Ton for Export

	£ s.	
Foundry iron, Cleveland No. 4	9 19	$38.21
Ship plates	24 0	92.16
Beams	23 0	98.32
Steel bars, ¾ to 3 in.	25 0	96.00
Rails, 60-lb. and up	23 0	98.32
Tin plate, per base box	1 12	6.14
Galvanized sheets, 24 g.	27 0	103.68

LUXEMBURG

Prices Per Metric Ton, Domestic

	Marks	
Foundry iron, No. 4	1485	$23.07
Foundry iron, No. 5	1470	23.31

FRANCE

Prices Per Metric Ton, Domestic

	Francs	
Coke, for blast furnace use	135	$9.49
Beams, per 100 kilos	100	7.03
Plates, heavy	1205	84.71
Plates, medium	1280	89.98
Plates, thin	1355	95.26

BELGIUM

Prices Per Metric Ton for Export

	Francs	
Steel bars	650	$48.23
Shapes	650	48.23
Steel rails	750	55.65
Bessemer steel sheets	875	64.93
Foundry iron	425	31.54

St. Louis Coke & Chemical Co. Furnace Blown In

The new blast furnace of the St. Louis Coke & Chemical Co., Granite City, Ill., described in THE IRON AGE of Jan. 6, was blown in on Feb. 9, using exclusively metallurgical coke made from 100 per cent Illinois and Indiana coal. At the instance of the construction engineers, 12,000 tons of Connellsville coke was on hand, but there proved to be no necessity for using it.

First Steel Poured

The first steel for the manufacture of armor plate by the United States Government was poured at the naval ordnance plant at South Charleston, W. Va., on Feb. 2.

Repairs have about been completed to the blast furnace of the Jackson Iron & Steel Co., Jackson, Ohio, damaged through an explosion last fall. The stack will be blown in when the condition of the iron market is such as to justify it.

The Shenango Furnace Co. plans to start one of its blast furnaces about Feb. 15 to supply hot metal to the Valley Mould & Iron Corporation at Sharpsville, Pa.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	$0.35	St. Paul	$0.695
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.78
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.33	Pacific Coast, ship plates	1.335
Indianapolis	0.345	Birmingham	0.765
Chicago	0.38	Jacksonville, all rail	0.555
St. Louis	0.475	Jacksonville, rail and water	0.46
Kansas City	0.815	New Orleans	0.515
Kansas City (pipe)	0.78		

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 70c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plate, 60c. to 75c.; rods, wire rope, cable and strands, $1; wire fencing, netting and stretcher, $1.20; pipe, not over 8 in. in diameter, 85c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 2.45c.

Wire Products

Wire nails, $3.25 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.50 and shorter than 1 in., $2. Bright Bessemer and basic wire, $3.25 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.25; galvanized wire, $3.95; galvanized barbed wire, $4.10; galvanized fence staples, $4.10; painted barbed wire, $3.40; polished fence staples, $3.40; cement-coated nails, per count keg, $2.85; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 58 to 60½ per cent off list for carload lots, 57 per cent for 1000-rod lots, and 56 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$3.90
Large boiler rivets.....4.00
Small rivets.....60 and 10 per cent off list
Small machine bolts, rolled threads
60, 10 and 10 per cent off list
Same sizes in cut threads.....60 and 10 per cent off list
Longer and larger sizes of machine bolts...60 per cent off list
Carriage bolts, ⅜-in. x 6-in.:
Smaller and shorter, rolled threads.....60 per cent off list
Cut threads.....50 and 10 per cent off list
Longer and larger sizes.....50 and 10 per cent off list
Lag bolts.....65 per cent off list
Plow bolts Nos. 1, 2 and 3 head...50, 10 and 5 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts ⅜-in. x 4-in.:
Smaller and shorter.....45, 10 and 10 per cent off list
Longer and larger sizes.....40, 10 and 5 per cent off list
Hot pressed sq. or hex. blank nuts.....$3.25 off list
Hot pressed nuts, tapped.....$3.00 off list
C. p. c. and t. sq. or hex. nuts, blank.....$3.10 off list
C. p. c. and t. sq. or hex. nuts, tapped.....$2.85 off list
Semi-finished hex. nuts:
⅛ to 9/16 in. inclusive U. S. S.....80 per cent off list
Same sizes S. A. E.....80 and 10 per cent off list
⅝ to 1 in. inclusive U. S. S. and S. A. E.,
70 and 10 per cent off list
Stove bolts in packages.....75, 10 and 12½ per cent off list
Stove bolts in bulk.....75, 10 and 10 per cent off list
Tire bolts.....60, 10 and 10 per cent off list
Track bolts.....5.50c. base

Square and Hex. Head Cap Screws

½ in. and under.....65 and 10 to 70 per cent off list
9/16 in. to ¾ in.....65 to 70 per cent off list

Set Screws

½ in. and under.....70 and 5 to 70 and 10 per cent off list
9/16 in. to ¾ in.....65 and 10 to 70 per cent off list

One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size, or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $57; chain rods, $57; screw stock rods, $62; rivet and bolt rods and other rods of that character, $57; high carbon rods, $68 to $75, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, $3.65 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅝-in. and 7/16-in., $4.50; 5/16-in., $5.25. Boat and barge spikes, $4.50 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, $5.50 base per keg of 200 lb. Tie plates, $3 to $3.60 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., $13.80 per package; 8-lb. coating, I. C., $14.10; 12-lb. coating, I. C., $15.80; 15-lb. coating I. C., $16.80; 20-lb. coating, I. C. $18.05; 25-lb. coating, I. C., $19.30; 30-lb. coating, I. C., $20.30; 35-lb. coating, I. C., $21.30; 40-lb. coating, I. C., $22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. from mill. Refined bar iron, 3.50c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜	50½	24	⅛	15½ to 16½	+10½ to 11½
½	54½	40	¼	19½ to 20½	1½ to 2½
¾ to 3	57½	44	⅜ to 1½	24½ to 25½	8½ to 9½

Lap Weld

2	50½	38	2	20½ to 21	6½ to 7
2½ to 6	53½	41	2½ to 6	22½ to 23	9½ to 10
7 to 12	50½	37	7 to 12	19½ to 20	6½ to 7
13 and 14	41				
15	38½				

But: Weld, extra strong, plain ends

⅛, ¼ and ⅜	46½	29	⅛	+16 to 17	+49 to 50
½	51½	39	¼	13½ to 14½	+2½ to 3½
¾ to 1½	55½	43	⅜	18½ to 19½	5½ to 6½
2 to 3	56½	44	½ to 1½	24½ to 25½	9½ to 10½

Lap Weld, extra strong, plain ends

2	48½	37	2	21½ to 22½	8½ to 9
2½ to 4	51½	40	2½ to 4	23½ to 24	11½ to 12
4½ to 6	50½	39	4½ to 6	22½ to 23	10½ to 11
7 to 8	46½	33	7 to 8	14½ to 15	2½ to 3
9 to 12	41½	28	9 to 12	9½ to 10	+2 to 2½

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel

1¾ to 2 in.	19½
2¼ in.	24
2½ to 3¼ in.	30½
3½ to 4½ in.	40½

Charcoal Iron

1¾ to 1⅞ in.	+ 10
2 in.	List
2¼ in.	— 2
2½ in.	— 6
2¾ to 3¼ in.	— 7
3½ to 4½ in.	— 12

Standard Commercial Seamless—Cold Drawn or Hot Rolled

	Per Net Ton		Per Net Ton
1 in.	$327	1¾ in.	$207
1¼ in.	267	2 to 2½ in.	177
1⅜ in.	257	2¾ and 3¾ in.	167
1½ in.	207	4 in.	187
		4½ to 5 in.	207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed

	Cents Per Lb.		Cents Per Lb.
No. 8 and heavier	3.45	Nos. 13 and 14	3.65
Nos. 9 and 10 (base)	3.55	Nos. 15 and 16	3.75
Nos. 11 and 12	3.60		

Box Annealed, One Pass Cold Rolled

	Cents Per Lb.		Cents Per Lb.
Nos. 17 to 21	4.15	No. 28 (base)	4.35
Nos. 22 to 24	4.20	No. 29	4.45
Nos. 25 and 26	4.25	No. 30	4.55
No. 27	4.30		

Galvanized Black Sheet Gage

	Cents Per Lb.		Cents Per Lb.
Nos. 10 and 11	4.70	Nos. 25 and 26	5.40
Nos. 12 to 14	4.80	No. 27	5.55
Nos. 15 and 16	4.95	No. 28 (base)	5.70
Nos. 17 to 21	5.10	No. 29	5.95
Nos. 22 to 24	5.25	No. 30	6.20

Tin-Mill Black Plate

	Cents Per Lb.		Cents Per Lb.
Nos. 15 and 16	4.15	No. 28 (base)	4.35
Nos. 17 to 21	4.20	No. 29	4.40
Nos. 22 to 24	4.25	No. 30	4.40
Nos. 25 to 27	4.30	Nos. 30½ and 31	4.45

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin	Lead		Zinc	
Feb.	Lake	Electrolytic	New York	New York	St. Louis	New York	St. Louis
2.....	13.25	12.75	32.00	4.75	4.50	5.50	5.00
3.....	13.25	12.75	30.25	4.75	4.50	5.50	5.00
4.....	13.25	13.00	32.50	4.75	4.50	5.50	5.00
5.....	13.37½	13.00	....	4.75	4.50	5.50	5.00
7.....	13.50	13.00	33.00	4.75	4.50	5.50	5.00
8.....	13.50	13.00	32.50	4.75	4.50	5.50	5.00

NEW YORK, Feb. 8.

Demand for copper and tin is a little better, but for the other metals there is no change. Where there has been any change in quotations the difference up or down has been slight.

New York

Copper.—Certain sellers report a definite improvement in foreign demand, which has resulted in more sales than recently. Some also say that domestic demand is a little better. The movement, however, is without significance. The principal attention has been focused on the plan to finance the surplus stocks of copper, amounting to not less than 400,000,000 lb., and it appears probable that this movement has succeeded. The idea is to finance this amount of metal for export, but details are not yet available. The effect of this movement, however, has been at least sentimental enough to cause the London market to advance about ½c. per lb. the last week. As a result of these developments the domestic market is somewhat firmer at 13c. to 13.25c., delivered, for electrolytic copper and early delivery, with 13.25c. to 13.50c. asked for near-forward position. Lake copper is also nominally a little stronger at around 13.50c. for early delivery.

Tin.—Up to Friday of last week there was again a quiet and steady business done in tin, mostly through sales to dealers, but consumers were also buyers. It is estimated that 125 to 150 tons per day was involved. The advance in London at the end of last week put a check upon this buying, since which time the market has been very quiet. For the first time in a long period sales were made on the New York Metal Exchange last Friday of 75 tons of future shipment Straits tin in three 25-ton lots, ranging from 32c. to 32.50c. There is as yet no more information about the movement of the Malay Government to reduce its minimum price to £205, but definite news is expected in a day or two. Spot Straits tin, New York, has hovered around 33c. during the week, and to-day the quotation is 32.50c., New York. The London market is again lower than a week ago by about £4 per ton, spot standard being quoted at £164, future standard at £169 and spot Straits at £184. Arrivals thus far this month have been 960 tons, with 2535 tons reported afloat.

Lead.—The market continues quiet and featureless. Some of the independents are now down to the price of the leading interest, which is 4.75c., New York, and they appear to be offering enough metal at this level to meet the requirements, which are not heavy. The St. Louis price in the outside market is 4.50c. for prompt shipment from the West. The leading interest has not changed the St. Louis quotation, which remains at 4.75c.

Zinc.—There is no improvement in demand, and the market continues sluggish. Prime Western for early delivery is quoted at 5c., St. Louis, or 5.50c., New York, while the foreign metal available is held at around 5.25c. to 5.35c., seaboard. It can be definitely stated that 10,000 tons of German zinc was recently sold for delivery in this country at 4.50c. in bond, which, duty paid, is about 5.12½c., seaboard. Statements that German zinc can be produced as low as 2c. per lb. and shipped into this country at 3c. are characterized as erroneous. The amount of zinc available from this source is not believed to be large and the constant fluctuations in exchange, especially advancing ones, are important factors in any such sales.

Antimony.—Wholesale lots for early delivery are nominally unchanged at 5.25c., New York, duty paid.

Aluminum.—The leading producer is quoting virgin metal, 98 to 99 per cent pure, at 28.20c., f.o.b. producer's plant, in wholesale lots for early delivery, while the same grade, largely foreign, is held by other sellers at 24c. to 25c., New York.

Chicago

Feb. 8.—Although the large reported sale to Germany has been denied, copper is stronger and there has been some buying of fair-sized lots. It is intimated that producers are arranging to finance consumers unable to secure credit for purchases. Tin is weaker and the attempt of the Federated Malay States to fix a minimum price has apparently failed. Lead and spelter have both declined and new low levels of prices have brought out some buying of the latter metal. Old metal prices are unchanged. We quote Lake copper at 13.50c. to 13.75c. in carload lots; tin, 36c.; lead, 4.65c.; spelter, 5.20c.; antimony, 7c. to 7.50c. On old metal we quote copper wires, crucible shapes, 9c.; copper clips, 9c.; copper bottoms, 7.50c.; red brass, 9c.; yellow brass, 6.; lead pipe, 3c.; zinc, 3c.; pewter, No. 1, 17c.; tinfoil, 20c.; block tin, 25c., all these being buying prices for less than carload lots.

St. Louis

Feb. 7.—The non-ferrous markets continue weak and lower, with lead in car lots at 4.50c and spelter 5.10c. In less than car lots the figures are: Lead, 5c; spelter, 6c; tin, 38c; copper, 14c; antimony, 7.50c. In the Joplin district the ore production continues to be curtailed because of the low prices, and lead ore, basis 80 per cent, is now at $45 per ton, while zinc ore, basis 60 per cent, has fallen to $20 per ton, according to grading. Calamine is out of the market. The total production of the district is not exceeding 4500 tons, which is about half its usual capacity. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 4c; heavy yellow brass, 6.50c; heavy red brass, 10c; heavy copper and copper wire, 10c; light copper, 9c; pewter, 18c; tinfoil, 20c; zinc, 3c; lead, 3.50c; tea lead, 2c; aluminum, 10c.

Lock Company Taken Over

The plant and business complete, of the Slaymaker Lock Co., Lancaster, Pa., has passed into the hands of a corporation headed by Walter E. Fraim, Lancaster, Pa., who assumed the active management of the plant, Feb. 7. Mr. Fraim, until Jan. 1, had been connected for many years with the E. T. Fraim Lock Co., Lancaster, Pa., and had been president of the corporation since the death of his father in 1917.

Associated with Mr. Fraim in the management of the business will be Henry H. Hanton, of New York City, and John M. Kendig, of Lancaster, both of whom have been connected with the Fraim Lock Co. for more than 18 years; a number of employees of the Slaymaker plant, and S. C. Slaymaker, one of the founders of the business, who holds a substantial interest.

Application has already been made for a charter under Pennsylvania laws. The officers of the concern will be W. E. Fraim, president and general manager; S. C. Slaymaker, vice-president and assistant general manager; H. H. Hanton, treasurer and sales manager; J. M. Kendig, secretary; J. T. McGovern, Jr., assistant secretary, and W. H. Smith, assistant sales manager.

China, in her five northern provinces, is facing the worst famine in her history, perhaps the worst disaster in all recorded history. Continuous drought for eighteen months has caused the failure of three successive crops. The next crop will not be harvested until June. In an area of 100,000 square miles 45,000,000 people are threatened with famine; 15,000,000 are said to be literally starving, and 10,000 are dying every day. To meet the situation the President has appointed the American Committee for China Famine Fund, with Thomas W. Lamont, New York, as chairman, and headquarters at the Bible House, Astor Place, New York. Checks should be sent to Vernon Munroe, treasurer.

Serious Competition from Foreign Iron Ores

Lake Superior Producers See Danger of Being Excluded from Eastern Business—Will Ask Suspension of Proposed Rate Advance

CLEVELAND, Feb. 8.—Lake Superior iron ores may be shut out of the Eastern market during the present year by foreign ores which are being freely offered at considerably lower prices than lake ores. Prices of 10 to 12c. per unit are now being quoted on Spanish and Swedish ores as compared with the present delivered cost of 17c. per unit for old range non-Bessemer ore, which is the Lake Superior ore most generally sold in the East. This lake ore price is based on 1920 prices and present transportation costs. The delivered price of the same ore in eastern Pennsylvania before the advance in freight rates last year was 16c. per unit. Should lake ore prices be reduced $1 a ton this year, the unit price delivered would be reduced only to about 15c.

Three Important Factors

Three factors have entered into the situation and tended to cause a wide spread in prices between Lake Superior and foreign ores in the Eastern market. Two of these, the present low ocean transportation rates and the existing exchange rates, have brought down the cost of foreign ores to Eastern furnaces. The third factor, the advance in rail rates, has advanced the cost of lake ores to Eastern consumers. This increase in rail rates was not a factor when ore sales were made a year ago and as the advance in rates did not go into effect until late in September, the bulk of the Lake Superior ore shipped East during 1920 was at the old transportation rates. However, ocean rates were comparatively high last year and consequently sellers of lake ore did not feel very strongly the competition of foreign ores in the Eastern market, the imports of ore being light. While attempts are being made to sell foreign ore in the East, furnaces have large stocks and early buying is not expected, but with the lower prices on foreign ores, Lake Superior ore interests regard the prospect of competing with the imported ores far from promising.

High Rail Rates

The present rail rate on iron from Buffalo to Bethlehem, Pa., and other furnaces in that vicinity is $2.24 per ton for direct shipment as compared with $1.60 per ton before the 40 per cent freight advance last year. For some time, the rate was $1.45 before being advanced to $1.60. Lake ore shippers claim that the present rail rate on ore to the East is too high and that the rate should not have been advanced on a percentage basis which made last year's rate increase 64c. per ton on ore for Eastern furnaces as compared with an advance of 26c. per ton, or from 65c. to 91c. from Lake Erie ports to the Mahoning and Shenango Valleys and with an advance of 36c. per ton, or from 91c. to $1.27 from lake docks to the Pittsburgh district.

Lake ore sellers see in the high rail rate a danger that lake ores may be unable to compete with foreign ores in the Eastern market. From the consumers' standpoint the rate advance on ore has caused an increase in production costs that is particularly felt in the East. One eastern blast furnace has figured that its present transportation costs in making a ton of pig iron is $12.50, this including the cost of carrying the ore from the mines to the furnace as well as the transportation of other raw material.

Influence on Prices

The Eastern ore situation may be an important factor in determining Lake Superior ore prices for 1921. Sellers of lake ore will attempt to avoid being driven out of the Eastern ore market by the competition of foreign ores, and it is possible that a further reduction of ore miners' wages will be made to meet conditions before ore prices for the season are established. With the 15 per cent cut in miners' wages made by most of the mining companies Feb. 1, these wages are still regarded as high and further reductions are being given consideration.

Will Ask Suspension of Advance

The ore mining companies that are members of the Lake Superior Iron Ore Association have prepared an application for a suspension of the new tariffs filed with the Interstate Commerce Commission by the Michigan and Wisconsin railroads, increasing 10 to 15c. a ton the carrying charge on ore from the old ranges to Ashland, Escanaba and Marquette, and this application will probably be filed with the Interstate Commerce Commission within a day or two. It is expected that the suspension of the rates will be granted, to continue in effect until the Interstate Commerce Commission passes on the entire subject of ore rates, taking up at the same time the application filed recently by the mining companies, that all rail rates from the mines to the docks in the Lake Superior district be reduced.

In their application for a suspension of tariffs the mining companies contend that the present rates are excessive; that every advance in the iron ore rates in excess of a just and reasonable rate automatically increases the cost of all steel articles which must be purchased by all railroads, and that these additional costs would further increase unnecessarily the present high operating expenses of the railroads and add further inflated values to plant and equipment account; that an increase in transportation rates on ore is not justified at this time, since the cost of living has fallen 25 per cent in 12 months, according to Government reports, and manufacturers and merchants are offering their products at greatly reduced prices which must result in lower material and labor costs to the railroads; that rate increases at the present time would be against all fundamental economic laws, as the country is in the midst of a period of falling markets and curtailing all production, due to the lack of demand for goods and service, for which the only remedy is a progressive reduction of costs to stimulate trade, and that an increase in cost of iron and steel at its source multiplied by manufacturing processes can only have the effect of still further retarding the resumption of operations by many plants, while a reduction in present rates is certain to lead to greater activity in the iron and steel industry and thus will benefit all railroads. Another contention of the mining companies is that the increased rates would be a discrimination against Michigan mines.

PERSONAL

C. B. McElhany, vice-president American Steel Export Co., New York, and one of the organizers of the company when it developed out of the export department of the Cambria Steel Co., has resigned and retires from the company. He will start shortly on an extended trip to the Orient with his family.

J. H. McElhinney, formerly assistant engineer Youngstown Sheet & Tube Co., Youngstown, Ohio, and since last April engineer in charge of construction of a new tandem rolling mill at the plant of the Columbia Steel Co., Elyria, Ohio, has been made assistant manager of the latter company.

G. Gordon Green, formerly blast furnace construction engineer Tata Iron & Steel Co., Ltd., India, sailed from Seattle Jan. 27 to assume similar duties with the Lungyen Mining Administration of China, which is erecting near Peking a 250-ton blast furnace of Perin & Marshall's design.

R. F. Eissler has been appointed assistant to the vice-president of the Chicago Pneumatic Tool Co., with headquarters in the company's new office building at 6 East Forty-fourth Street, New York. W. C. Straub, formerly New Orleans district manager, has been placed in charge of the Pittsburgh office, succeeding Mr. Eissler.

A. W. A. Eden, formerly assistant structural engineer with Westinghouse, Church, Kerr & Co., Inc., has become affiliated with the Harris Structural Steel Co., New York.

John Hunter, power plant engineer, has just accepted the position of chief engineer of the Heine Safety Boiler Co., St. Louis. He has been identified with marine engineering as chief engineer on ships, and as a Government assistant in shipbuilding during the war.

John J. Dillon has been placed in charge of the newly established Monel metal department of the U. T. Hungerford Brass & Copper Co., New York. For eight years he has made a specialty of this metal and its products.

Robert N. Todd, formerly with the Bethlehem Steel Co., South Bethlehem, has been appointed New York district representative of cranes for the Pawling & Harnischfeger Co., succeeding S. I. Roth, who has been appointed district representative of the company's line of trench and drag line excavators, back fillers and excavating cranes. The latter line was formerly sold by William J. Cullen, 30 Church Street. Both Mr. Todd and Mr. Roth will continue in the office at 50 Church Street.

Horace R. Grant has been made president and general manager of the Allen Mfg. Co., Hartford, Conn., set screws, to succeed Joseph H. King, who also retires from the directorate. Graham H. Anthony, vice-president and secretary, was made a member of the board.

George F. Wright, formerly vice-president Wickwire-Spencer Steel Corporation, Worcester, Mass., and for the past year secretary of its operating committee, has resigned. He plans to take a vacation and then enter business for himself in Worcester.

Samuel A. Benner has been made president of the Empire Tube & Steel Corporation, maker of tubing from cold rolled strip steel for structural purposes and metal fixtures and for the automotive industry, with works at College Point, N. Y. He is probably best known as one time general manager of sales of the Carnegie Steel Co., but his latest connections were as vice-president of the American Steel Export Co. and later of the Federal Export Corporation, New York.

Carl Horix has resigned as vice-president and general manager of the Toledo Bridge & Crane Co. Recently the Austin Machinery Corporation purchased practically all of the outstanding stock of the Toledo Bridge & Crane Co. and sold the crane business to the Ohio Locomotive Crane Co., Bucyrus, Ohio. The Austin corporation is now operating the Toledo plant at practically full capacity, building its line of draglines, shovels, concrete mixers and road machinery.

W. F. Billingsly, formerly sales manager crane department of the Toledo Bridge & Crane Co., has accepted a similar position with the Ohio Locomotive Crane Co.

Charles H. Richards, formerly with the Remington Arms Co., Inc., has been appointed general manager of the Warren F. Fraser Co., Westboro, Mass., manufacturer of universal and plain grinders and builders of semi-automatic and full automatic grinders.

Allen Hopkins, formerly with the Debevoise-Anderson Co., New York, and Pickands-Brown Co., Chicago, as domestic coke salesman, joined the Seaboard By-Products Coke Co., Jersey City, N. J., on Feb. 1, and will continue to call on the trade in that district.

William H. Barr, president National Founders Association, has resigned as president of the Inter-Racial Council, as has also Gen. Coleman DuPont, who was chairman of the board of directors of the council. Mr. Barr expresses an intention to do what he can to help forward the affairs of the Inter-Racial Council unless its management "falls into the hands of those opposed to sound American industrial practice." The resignation is due in part to "private intrigues of particular individuals" and he expresses regret over the existence of "personal ambitions that threaten the splendid possibilities of this organization."

Malcolm R. Maclean, until recently secretary and sales manager of the Duquesne Steel Foundry Co., and for 10 years with the American Steel Foundries, has been appointed sales manager, castings division, Penn Seaboard Steel Corporation, Philadelphia.

Lewis Taylor, assistant chief engineer McClintic-Marshall Co., Pittsburgh, has been appointed chief engineer of the company, succeeding the late Paul L. Woelfel. Mr. Taylor has been identified with McClintic-Marshall Co. since shortly after its organization and has held a position as assistant chief engineer for the past 12 years. His experience includes an important part in the construction of most of the large bridges and other structures erected by the company. He graduated from the University of Pennsylvania in 1900 and is a member of the American Society of Civil Engineers, the Engineers' Society of Western Pennsylvania, and the American Society for Testing Materials.

W. M. White, Allis-Chalmers Mfg. Co., Milwaukee, Wis., gave an address on "Recent Water Wheel Developments and Settings," and E. B. Powell, Stone & Webster, Boston, on the "Design of the Steam Power Station for Hydraulic Relay" before the joint meeting of the Boston section, American Society of Mechanical Engineers, and American Institute of Electrical Engineers, and Boston Society of Civil Engineers, at the City Club, Boston, Feb. 7. This meeting was the final one of a series on power development of New England.

Walter H. Baker, secretary, treasurer and general manager of the Universal Steel Co., Bridgeville, Pa., recently was elected to the board of directors of the Electric Alloy Steel Co., Youngstown, Ohio.

H. C. Wadleigh and Clarence A. Gares, Westboro, Mass., have taken over the distributing agency for the Page Steel & Wire Co., Adrian, Mich., and Monessen, Pa., with headquarters at 77 Summer Street, Boston.

W. R. Yorkey, formerly manager of the Birmingham office of the Electric Controller & Mfg. Co., Cleveland, has been appointed manager of the Boston office of the same company. W. H. Beatty of the Cleveland sales staff succeeds Mr. Yorkey at Birmingham.

Lieut.-Col. A. E. White, president American Society for Steel Treating, was a guest of the Boston chapter on Feb. 7 at the Engineers' Club. During the evening he delivered an address on "Alloy Steel—Its Rise and Secrets." He presented the same address before the Hartford chapter Feb. 10.

Frank A. Foster, Auburn, R. I., gave an illustrated talk on "Industrial China" at the meeting of the New England Foundrymen's Association on Feb. 9, at the Exchange Club, Boston.

OBITUARY

WILLIAM PENN SNYDER, chairman W. P. Snyder & Co., and long a prominent figure in the iron and steel industry, died at his home, 856 Ridge Avenue, Pittsburgh, North Side, Feb. 3. He had been in poor health for several years, but had been seriously ill only in the past few weeks. Mr. Snyder was born in Hollidaysburg, Pa., in 1861, and was the son of Rev. Edmund Bowman and Mary (McCoy) Snyder. He was educated in the public schools of Pittsburgh, and at an early age became an office boy for Schoenberger & Co., one of the pioneer iron and steel firms of Pittsburgh. In 1880 he formed a partnership with John G. A. Leishman, and the firm of Leishman & Snyder for a number of years carried on a successful iron brokerage business. In 1888, when Mr. Leishman secured an interest in the Carnegie Steel Co., Mr. Snyder purchased his interest in the partnership and carried on the business under the name of W. P. Snyder & Co.

As a close friend and business associate of Henry W. Oliver, Mr. Snyder was active in the development of Lake Superior iron ore, and acquired extensive holdings in that region. Credit has been given these men for being the first to use 100 per cent Mesabi ore in a blast furnace in the face of the fact that at the time this was considered impossible, due to the finely comminuted character of much of the Mesabi range product. To-day the use of 100 per cent Mesabi ore in a furnace is not unusual. In the production of coking coal an important place has been taken by a company in which were combined the interests of Mr. Snyder and Mr. Oliver. In the fifth bituminous district of Pennsylvania, commonly referred to as the Connellsville basin, next to the H. C. Frick Coke Co., the largest coal output is that of the Oliver & Snyder Steel Co.

WILLIAM PENN SNYDER

In 1894 Mr. Snyder was made vice-president of the McClure Coke Co., which position he held until the company was absorbed by the H. C. Frick Coke Co. In 1904 he was elected president of the Clairton Steel Co. and completed the building of the large steel plant at Clairton, Pa., which now constitutes the Clairton works of the Carnegie Steel Co. While Mr. Snyder was intensely interested in these various companies, he was gradually developing his own smaller company, the Shenango Furnace Co., to which, after Mr. Oliver's death in 1904, he turned practically his entire efforts. With extensive ore holdings in the northwest, and blast furnaces, coal mines and coke works in western Pennsylvania, Mr. Snyder had the nucleus for a flourishing company. Only one link was missing to make a complete chain from the ore in the ground to the furnace product, that being vessels to bring down the ore from the northwest. So in the period 1906-1912 Mr. Snyder built a fleet of large bulk freighters for this purpose.

Mr. Snyder was a direct descendant of Simon Snyder, who was Governor of Pennsylvania in 1808. He came from one of the old families of Pennsylvania, the head of which came from Germany in 1720 and settled in the northeastern part of Pennsylvania. Mr. Snyder was president of the Shenango Steamship Co., the Shenango Steamship & Transportation Co. and the Antoine Ore Co.; a director of the Pittsburgh Trust Co. and of the Union Trust Co. of Clairton, and a member of the Pennsylvania Society of the Sons of the American Revolution and of the leading clubs of Pittsburgh. He is survived by his wife, who was Miss Mary C. Black, and two children, W. P. Snyder, Jr., president W. P. Snyder & Co. and subsidiaries, and Mrs. Mary Black Drew, wife of Judge James B. Drew of Pittsburgh.

JOHN MCGINLEY, vice-president and general manager West Penn Steel Co., Brackenridge, Pa., and one of the organizers of that company, died at his home in Natrona Heights, Pa., Jan. 29, following a brief illness of pneumonia. He was born near Londonderry, Ireland, 64 years ago and entered the steel business at an early age in Scotland, as a furnace boy with the Monessend Steel Co. of Glasgow. He was with this company for four years and then went to England, where he remained nine years with a steel company. He came to the United States in 1886 and became a department foreman for the Cleveland Rolling Mill Co., Newburgh, Ohio. In 1888 he became superintendent of the open-hearth department of the Kirkpatrick Steel Co., now the West Leechburg Steel Co., West Leechburg, Pa. Late in 1900 he identified himself with the Allegheny Steel Co., in the capacity of general superintendent and retained this connection until 1908, when he and others organized the West Penn Steel Co. He was one of the original members of the American Iron and Steel Institute, a member of the Engineers Society of Western Pennsylvania and of several clubs in the Pittsburgh district.

WILLIAM W. MCNEILL, who was private secretary of the late Wallace H. Rowe, when the latter was president of the Pittsburgh Steel Co., and who was business manager of the Rowe estate, died at his home in Bellevue, Pa., Feb. 3. He was born in Pittsburgh 67 years ago and before becoming associated with Mr. Rowe was an expert accountant and also had been engaged in the glass business.

ALFRED L. LINCOLN, prominently identified with the Taunton, Mass., twist drill industry, died Feb. 1, at the Clearwater Hospital, Clearwater, Fla., aged 59 years. His connection with the twist drill industry began in 1890, first with the New Process Co. as manager. Later he was a promoter of the Lincoln & Wood Co., afterward the Lincoln & Williams Co., and still later the Lincoln Twist Drill Co., which eventually was sold to the Greenfield Tap & Die Corporation, Greenfield, Mass. Within the past year or so Mr. Lincoln organized the Old Colony Tool Co., Taunton, taps, dies, etc., of which his sons, Ralph L. and Jerome W. Lincoln, are officers.

FREDERICK WOOSTER RANDALL, founder of the Brooklyn Metal Ceiling Co., Brooklyn, N. Y., died at his home in Amityville, L. I., on Jan. 28, at the age of 71. His son, Frederick King Randall, is the present active head of the Brooklyn Metal Ceiling Co.

LOUIS R. LECLEAR, a highly valued accountant and office manager for over 25 years of A. Milne & Co., steel and iron merchants, New York, died Feb. 3 at his home in Rutherford, N. J., at the age of 73. Mr. LeClear was a veteran of the Civil War.

W. SCOTT BONNELL, aged 78, for many years identified with financial and industrial interests in the Mahoning Valley, died Feb. 5 at his home in Youngstown,

Ohio, following a protracted period of declining health. He served as secretary of the Brown-Bonnell Co., iron manufacturer, whose plant is now operated by the Republic Iron & Steel Co., and later became vice-president of the Mahoning Valley Iron Co. He was also president of the Mahoning National Bank. For a number of years Mr. Bonnell had been retired.

JAMES HAY, one of the organizers and a former president of the Ruud Mfg. Co., heaters, Pittsburgh, died Feb. 5, at the home of his daughter, Mrs. Frank Myers, Atlantic City. Mr. Hay was born in Edinburgh, Scotland, 78 years ago and went to Pittsburgh when a young man. He retired from active business about six years ago.

ABRAHAM TALLMADGE VAN SCOY, vice-president International Harvester Co. of America, in charge of administration of the Milwaukee Harvester Works division, was stricken with apoplexy while going to his offices in the Colby-Abbot Building on Feb. 3, and died shortly afterward.

ANDREW J. PIERCE, a pioneer designer and manufacturer of multiple-cylinder internal combustion engines and passenger automobiles, died at his home in Chicago at the age of 62 years. He organized the Pierce Engine Co., Racine, Wis., in 1893 to build gasoline engines and in 1895 founded the Pierce-Racine Motor Car Co., which was acquired in 1910 by the J. I. Case Threshing Machine Co., Racine, and is still operated as the motor car division by this interest.

W. THOMAS STARR, president B. F. Starr Co., manufacturer of machinery, Baltimore, died Feb. 1 at his home in Baltimore. He was 63 years old and had been in ill health about six months. Death was due to heart trouble.

COL. HARRY E. TALBOTT, Dayton, Ohio, manufacturer, died suddenly at Miami, Fla., on Jan. 30. Colonel Talbott supervised the construction of the locks at Sault Ste. Marie, Ont., and built part of the Lake Superior Co.'s (now the Algoma Steel Co.) plant at the Soo. He was 61 years old.

A. T. J. WOOD, president Dunbar-Wood Co., manufacturer of variable speed pulleys, Covington, Ky., died recently in that city. Mr. Wood was born in Sydney, Australia, 69 years ago.

JOSEPH F. TIRALLA, who for more than 20 years was identified with the Skinner Shipbuilding & Dry Dock Co. and the Baltimore Dry Docks & Shipbuilding Co., as purchasing agent, until forced to retire by failing health, died at his home, Jan. 22.

EDWARD D. WOLFE, treasurer Service Machine Co., Elizabeth, N. J., died on Jan. 27.

HOWARD M. HANNA, brother of the late Marcus A. Hanna, founder of the firm of M. A. Hanna & Co., Cleveland, and for a long time a member of the firm, died Feb. 8 at his home in Thomasville, Ga., after a long illness, aged 81 years. He retired from the firm about seven years ago. He was also a brother of Leonard C. Hanna, long associated with the firm. A son, Howard M. Hanna, Jr., is now a member of the firm of M. A. Hanna & Co. Mr. Hanna had made his home in Georgia for the last 30 years. He made numerous gifts to various educational and other institutions in Cleveland.

Among the additions under way at the plant of the Truscon Steel Co., Youngstown, Ohio, is a stock and warehouse building 60 x 980 ft., which is virtually completed. The company is installing equipment of its own design to manufacture wire mesh. Its capacity for the manufacture of steel sash has been increased to 2,000,000 sq. ft. per month. An official states it is expected to shortly increase production to the rate of last October, of 1,250,000 sq. ft. The company is putting into effect a new plan of distributing this product through dealers.

The E. C. Aylward Foundry Co., Neenah, Wis., manufacturer of gray iron castings, is again in operation after a suspension of production since the middle of December.

TRADE CHANGES

The Lansing Stamping & Tool Co., Lansing, Mich., has increased its directorate from five to seven men. They are Charles Lawrence, G. L. Robinson, F. M. Odel, G. F. Conway, E. T. Conway, K. H. Shultes, William Kerns. The officers re-elected are: president, Charles Lawrence; vice-president and general manager, G. F. Conway; secretary and treasurer, F. M. Odel.

The Detroit Copper & Brass Rolling Mills has increased its directorate from seven to nine men. The directors elected at the annual meeting, Jan. 25, are: A. H. Buhl, L. D. Buhl, G. B. Davis, F. J. Hecker, F. H. Hoffman, L. H. Jones, R. P. Joy, A. J. Peoples, H. D. Shelden; and the new officers are: L. H. Jones, president and general manager; R. P. Joy, vice-president; A. H. Buhl, vice-president; F. H. Hoffman, assistant general manager; A. J. Peoples, secretary-treasurer; W. P. Bache, assistant secretary-treasurer; J. E. Workman, auditor; Alexander Henderson, works manager.

W. L. Churchill and Albert McDonald have formed the McDonald-Churchill Corporation, industrial engineering service, New York. Mr. Churchill, president, was formerly engaged in consulting industrial engineering, and Mr. McDonald, vice-president and general manager, was formerly vice-president of C. E. Knoeppel & Co., Inc., New York.

The plant of the Pomeroy Machine Co., Pomeroy, Ohio, has been sold to John M. Crawford, head of the Parkersburg Rig & Reel Co.

The Hauger Wheel Co., Toledo, Ohio, has purchased the plant formerly occupied by the Consolidated Mfg. Co., at Fernwood Avenue and the New York Central Railroad. The company will manufacture automobile wheels.

The Connecticut Marine Boiler Works, Bridgeport, Conn., is now located at 62 Kossuth Street. The company formerly was located at the foot of Pembroke Street.

The Duplex Storage Battery Co. of Beaver Dam, Wis., has reorganized its official personnel and management, the new officers being.: President, J. W. Deniger, Beaver Dam; vice-president, Herman L. Schickel, Milwaukee; secretary-treasurer, M. A. Jacobs, Beaver Dam; general manager, Peter M. Kettenhofen; factory superintendent, Joseph Motlerus; directors, John V. Zweck, Beaver Dam; A. H. Luckenbach, Chicago. It is a $1,000,000 corporation and occupies the works of the former Beaver Dam Mfg. Co.

Albert M. Weis, 634 Cramer Street, Milwaukee, Wis., has been appointed representative in the Milwaukee district of Frederic B. Stevens, Detroit, Mich., manufacturer of foundry facings, buffing compositions, platers' supplies and similar foundry necessities. A warehouse has been established at Thirty-fourth and National avenues, Milwaukee.

The Schlangen Bros. Co., maker of brass goods, Chicago, has increased its capital stock from $50,000 to $100,000, with the following officers elected: N. A. Schlangen, president; Carl Schlangen, treasurer; E. C. Roos, secretary.

The Empire Machinery Exchange, Cleveland, dealer in used machinery, has moved from the Citizens' Building to larger quarters in the Newman-Stern Building, Twelfth and Walnut streets. E. A. Blanchard, formerly manager of the reclamation department of the Standard Parts Co., Cleveland, has become a member of the organization.

W. B. Whittaker, E. P. Yeary and S. M. Holtsinger, president, vice-president and secretary and treasurer, respectively, who have owned the majority of the stock in the C. E. Baylor Co., Morristown, Tenn., have sold their entire interests to Mrs. J. H. Baylor, A. R. Baylor, Robert A. Baylor and L. W. Garrett. The new officers are L. W. Garret, president and general manager; A. R. Baylor, vice-president; A. F. Sprinkle, secretary, and Robert A. Baylor, treasurer.

Interests formerly associated with the Stacey Supply Co., Hartford, Conn., have opened for business at 52 Union Place, under the name of the Tuthill Mill Supply Co.

The Bellamy Millwright & Machine Co., Boston, has been succeeded by a Massachusetts corporation of the same title, capitalized for $40,000, consisting of 800 shares, par $50, all of which are issued. Leon Bellamy, 3 Central Avenue, Newtonville, is president and treasurer.

The Perfection Engine Co., 567 National Avenue, Milwaukee, Wis., has been made defendant in involuntary bankruptcy proceedings instituted by the North Milwaukee Foundry Co., with a claim of $2,939; Badger-Packard Machinery Co., $125, and Detroit Auto Radiator Works, $720. The petition states that the assets amount to $20,000 and the liabilities are $17,000.

The Standard Sanitary Mfg. Co. has declared its quarterly dividend of 1¾ per cent on preferred and 1½ per cent and an extra of 2 per cent on common stock, both payable Feb. 10.

IRON AND INDUSTRIAL STOCKS

Prices Declined as Money Rates Advanced—Little Liquidation Evident

January ended and February began without a realization of the general prophecies that early in 1921 would see a distinct beginning in easier money. Instead, a higher range of money rates was in order the past week, and as they advanced, prices for securities on the leading exchanges of the country declined. No real pressure to sell is evident, however, and therefore little liquidation, only professional trading. Many reasons for the higher money rates have been advanced. And yet, notwithstanding the higher rates, basic credit conditions show little, if any, alteration. It now is believed the action of the money market is simply a flurry. The recent action of the foreign exchange markets suggests that the speculative bubble burst with Germany's refusal to pay as the Allies demanded.

As a group, the copper shares have shown less weakness than any other group of securities. This fact possibly is due to plans being made to sell $40,000,000 debentures covering 400,000,000 lb. of copper to be pledged as security for the notes at 10c. per lb. The slight improvement in the demand for steel products in a measure is offset by a lower average price, consequently quotations on steel shares have followed the general trend of market quotations under the lead of Crucible. The comparative steadiness of steel common, however, has acted as a check on offerings of steel issues in general. Declines in automobile shares have averaged about the same as those in the steel. The weakness of American Can can hardly be attributed to that company's financing of its 1921 tin plate requirements.

The range of prices on active iron and industrial stocks from Monday of last week to Saturday of this week was as follows:

Allis-Chal. com..	33⅜- 35½	Lack. Steel	52½- 53⅞
Allis-Chal. pf....	79 - 80	Lake Sup. Corp.. ..	- 9
Am. Can com...	28⅝- 32⅝	Midvale Steel ..	30⅜- 31¼
Am. Can pf.....	85¾- 86½	Nat.-Acme	23 - 24⅞
Am. C. & F. com.	120¼-123⅝	Nat. E. & S. com.	60 - 62½
Am. C. & F. pf. ..	-113	N. Y. Air Brake	78¾- 80
Am. Loco. com..	81¼- 82½	Nova Scotia Steel ..	- 35
Am. Loco. pf...	106 -106⅛	Pressed Stl. com.	90¼- 95
Am. Rad. com.. ..	- 70½	Pressed Stl. pf..	97 - 98
Am. Stl. F. com.	29⅝- 30¼	Ry. Stl. S. com..	84¼- 85½
Am. Stl. F. pf..	88 - 88¼	Ry. Stl. S. pf...	105 -105⅛
Bald. Loco. com.	85⅞- 90⅜	Replogle Steel ..	32 - 32½
Bald. Loco. pf... ..	-102	Republic com. ..	63⅝- 67⅜
Beth. Steel com.	52½- 54½	Republic pf	93½- 94½
Beth. Stl. Cl. B.	54⅝- 58¼	Sloss com.	50 - 51
Beth. Stl. 8% pf.	104 -105	Superior Steel ..	43 - 43⅛
Chic. Pneu. Tool	67½- 68	Trans.-Williams..	40¼- 40½
Colo. Fuel	27 - 29¾	Un. Alloy Steel..	31½- 32⅞
Cruc. Steel com.	87¼- 95⅝	U. S. Pipe com..	13 - 13¾
Cruc. Steel pf... ..	- 89	U. S. Pipe pf....	45½- 45¾
Gen. Elec.	125¾-128¼	U. S. Steel com.	81¼- 83
Gt. No. Ore Cert.	28½- 29¼	U. S. Steel pf...	110 -111½
Gulf States Steel	34 - 35½	Vanadium Steel.	35⅝- 37¼
Int. Har. com...	94⅝- 96¼	Westghouse Elec.	44 - 45
Int. Har. pf..... ..	-110		

Trumbull Steel Co. Annual Meeting and Report

Two directors were added to the board of the Trumbull Steel Co., Warren, Ohio, at the annual meeting, Feb. 1, William M. McFate of Warren, and Whitney Warner, Cleveland. Directors re-elected are Jonathan Warner, Philip Wick and John T. Harrington, Youngstown, Ohio; W. H. B. Ward and A. N. Flora, Warren, and William G. Mather and S. L. Mather of Cleveland. Officers chosen by the directors are Jonathan Warner, president; Philip Wick, W. H. B. Ward, A. N. Flora and William M. McFate, vice-presidents; A. L. Button, secretary; J. U. Anderson, treasurer; D. S. Dennison, assistant treasurer and assistant secretary; John T. Harrington, general counsel.

Gross sales of $35,850,811.78 in 1920 compare with $24,569,841.38 in 1919, and approximately $27,000,000 in 1918. Net earnings last year, after cash dividends, all charges and allowances, including a reservation of about $1,000,000 for Federal taxes, amounted to $2,600,000, or $5 a share on the 520,000 shares of $25 par value common stock outstanding. During the year dividends paid on common stock amounted to approximately $2 a common share, thereby making net earnings available for common, after preferred dividends and charges, about $7 a share. The company reports a surplus on Dec. 31 last of $8,129,062.13, as compared with $8,000,000 a year ago. Besides cash dividends in 1920, a 25 per cent common stock dividend amounting to about $2,600,000 was declared and charged to surplus.

The output of the open-hearth plant was 276,187 tons; output of finished products, 241,157 tons, and shipments, 250,451 tons. Payroll for the year was $9,922,516.89, compared with $8,000,000 the year previous.

The company has on its books about 3200 customers for its rather diversified product, which accounts, in a measure, for the number of orders which it receives even in times like the present.

The earnings of the Liberty Steel Co. which was acquired by the Trumbull Steel Co. in 1919, amounted to about $150,000, after paying all dividends and other charges. The Liberty company purchased all of its sheet bars from the parent company.

During the year stock was offered to employees on an installment plan and a cash plan, at $27.50 per share, with certain special dividend and insurance features. A total of 48,481 shares was purchased by 1438 employees.

At present the company has 520,000 shares of common stock outstanding and $9,880,000 worth of the preferred stock. Its total assets are $37,589,897.25. Cash, accounts receivable and bills receivable Dec. 31 were $4,922,380.22. Investments in stocks, bonds, Liberty bonds and the like were $2,442,853.28.

Inventories were $4,043,403.26 after a depreciation of $1,412,346.92 had been charged off on account of a change in prices. Depreciation on the plant for the year was fixed at $1,067,904.90. Repair and maintenance account was $2,053,051.51. A reserve of $200,000 was set up for possible bad debts.

The Trumbull company has two new hot strip mills under construction which will be ready for operation by May or June. President Warner states they are of the highest type and low cost units. The Trumbull-Cliffs Furnace Co. is building a 600-ton blast furnace for the Trumbull Steel Co., which will be ready for production about the middle of the year.

Midvale Steel & Ordnance Co. Earnings

For the three months ended Dec. 31 last the Midvale Steel & Ordnance Co. reports net earnings after taxes of $4,778,127, contrasted with $5,654,086 and $8,456,670, respectively, in the last quarters of 1919 and 1918. The net profits after all charges amounted to $2,056,724, equivalent to $1.02 a share; in the preceding quarter $2.22 a share was earned, and in the corresponding period in 1919 $1.64 a share.

For 1920 the net profits were $12,371,298, equal to $6.18 a share, as against $10,387,418 and $5.19 a share in 1919, more than those for 1919. As contrasted with the showing for The net earnings last year were $21,924,650, or $2,578,819 1918, however, 1920 net earnings were approximately $10,000,000 less.

Industrial Finances

The Union Steel & Wire Co., Indianapolis, has been sold by the Meyer-Kiser Bank, trustee, to J. L. Baugh and Lawrence Olson, two Indianapolis business men, for $82,500, creditors realizing about 50 cents on the dollar. The property was appraised at $165,000. John G. Hermann, president of the company, will remain with the new owners. The company will retain its present name and will be incorporated for $500,000. Mr. Baugh, formerly in the automobile business, will be manager. Mr. Olson was at one time the owner of the American Die Castings Co., Indianapolis. The trustee explains that the failure of the company was due to an excessive supply of raw material bought at top prices.

The Delta Electric Co., Marion, Ind., has increased its capital stock from $115,000 to $165,000.

The Citizens Loan and Trust Co., Logansport, Ind., has been appointed receiver for the Revere Motor Car Corporation of that city.

The Crescent Stove Works, Evansville, Ind., has increased the common stock from $100,000 to $200,000.

The Hydro-Electric Light & Power Co., Connersville, Ind., has increased its common stock from $375,000 to $500,000.

The Siebers & Raisch Pattern Works, Inc., 680-690 National Avenue, Milwaukee, has increased its capital stock from $5,000 to $25,000 to handle a larger volume of business. Oscar Siebers is president, and Erich Raisch, secretary and treasurer.

The Consumers' Tire & Supply Co., 323 West Trade Street, Charlotte, N. C., manufacturer of automobile tires, has increased its capital from $100,000 to $1,000,000.

The Auto Life Tire Chain Co., Milwaukee, which recently completed the first unit of its new plant at Cedarburg, Wis., has increased its capital stock from $25,000 to $125,000 shares of preferred and 2500 shares of non-par valued common stock. It is beginning quantity production of non-skid devices for automobiles. Officers have been elected as follows: President, O. F. E. Hoya; vice-president, A. L. Wolff; secretary, William F. Schad; treasurer, F. W. Andree.

Machinery Markets and News of the Works

GERMAN TOOLS SOLD HERE

Punching and Shearing Machinery Bought by an Ohio Company

Spotty Improvement in Machine-Tool Business Reported from Some Markets

German machinery has been sold in the United States. The buyer was the Ohio Locomotive Crane Co., Bucyrus, Ohio, which purchased four punches and shears for its affiliated organization, the Toledo Crane Co., which is equipping a new plant for fabricating overhead cranes. According to a report from Cleveland the prices on German machines were considerably lower than American makers named, but the seller, a New York firm, denies this. Before the war German machinery of this type was quite freely sold in the United States.

The Ohio Locomotive Crane Co. inquired a few months ago for about $150,000 worth of shop equipment, and it is stated that orders for practically all of this will be placed this week.

From all markets there is reported a slight increase in inquiries and orders for single machines, and used machines are also in better demand. New machines at prices fully 25 per cent below manufacturers' quotations are being freely offered and a considerable number of sales are being made. Generally these machines are offered by exporters whose orders were canceled by customers abroad.

In New England there is a slight improvement in demand. The Noyes-Buick Co., Boston, has issued a list of equipment required for manufacturing universal joints. The Eastern Massachusetts Street Railway Co. has inquired for a half-dozen tools and the Badger Fire Extinguisher Co. is in the market for presses. Otherwise prospective business in that section is confined to single machines.

In the Chicago market inquiries continue, but few orders are being placed. The Pettibone Mulliken Co., Chicago, and the General American Tank Car Corporation, Chicago, are prospective purchasers of new equipment, but formal inquiries have not been issued. The Chicago, Rock Island & Pacific Railroad has revived an inquiry for several tools. One large railroad has a list prepared, on which no action will be taken, it is reported, until the railroad wage problem has been settled. The A. O. Smith Corporation, Milwaukee, manufacturer of pressed steel automobile and truck frames, has placed orders for four special power presses, 75 riveting machines and general assembling machinery, involving a total expenditure of one-half million dollars. These purchases supplement an order for 11 presses costing $600,000 which are now being delivered by the Bethlehem Steel Co.

There has been scattered buying at Cincinnati, including a few export orders of small size. A shaper was sold for shipment to Honolulu and an inquiry has been received from Finland.

Beginning March 1 the Landis Tool Co., Waynesboro, Pa., will make a general reduction of 15 to 20 per cent in prices on all machines, with the exception of its crankshaft grinding machines. An Ohio manufacturer of alligator shears has announced a price reduction of about 10 per cent.

New York

NEW YORK, Feb. 8.

While developments in the machine-tool market are few, such change as may be noted is in the direction of improvement. Representatives of machine-tool builders and tool dealers report an increasing number of inquiries, but comment on the difficulty experienced in getting prospective buyers to the point of closing. Dealers in used machinery, however, report a fairly substantial increase in orders and inquiries. Quite a large number of new machines for resale are on the market, and these are moving fairly well at concessions amounting to 25 per cent or more from prices quoted by manufacturers on tools direct from their own stocks. These resale tools are largely exporters' stocks, which must be liquidated because of cancellations from customers abroad.

Some tool builders plan to restrict manufacturing operations further in the event that demand for their product does not speedily improve. For example, one plant now working four days a week will probably adopt a three-day-a-week schedule soon. The policy of many tool builders is not to let output run too far ahead of demand, which means that no large surplus stocks of tools will be built up. While on the surface there appears to be at present a large surplus of machines for which there are no orders, such it is said is really not the case. Tool builders and their representatives point to the fact that a month or two months' active demand would easily take all of the machines now ready for shipment.

Crane sales continue to show but slight activity. The American Gas & Electric Co., 30 Church Street, New York, which was in the market for a 25-ton, 73-ft. span overhead traveling crane, has postponed buying until lower prices are quoted. The Brooklyn Rapid Transit Co., Brooklyn, N. Y., has purchased a 3-ton, 32-ft. span overhead traveling crane from Victor R. Browning. The Chisholm-Moore Mfg. Co. has sold a 3-ton, 14-ft. 10-in. span hand-power crane to the Consumer Ice & Cold Storage Co., Elizabeth, N. J., and the Roeper Crane & Hoist Works has sold a 7½-ton, 26-ft. span overhead traveling crane to William C. Whitner & Co., Richmond, Va., for L. E. Easley of Richmond. A. E. Norton, Inc., 1 Broadway, New York, which is erecting a building for the International Mercantile Marine, has rented, instead of buying, two 20-ton hand power hoists.

The City Transit Commission, Municipal Building, New York, has taken bids for the proposed new car repair shops for the Interborough railroad system on 148th Street, Lenox and Seventh avenues. The lowest bid received is $376,442.70 against $456,191 submitted last fall and rejected at that time as being too high. Transit Construction Commissioner Delaney is in charge.

The Brooklyn Edison Co., Inc., 13 Willoughby Street, Brooklyn, will soon take bids for a new power house, 37 x 100 ft., at the corner of Livonia and Miller avenues. G. L. Knight is engineer in charge.

The Rosoff Engineering Co., 15 Park Row, New York, has plans under way for a new hydroelectric power plant in the Otselic valley, near Marathon, N. Y., estimated to cost about $5,000,000. It will be erected by a syndicate now being formed.

Meyer & Danziger, Inc., New York, has been incorporated with an active capital of $105,000 by J. M. Richman, R. E. Tuttle and A. R. Danziger, 245 Fort Washington Avenue, to manufacture mechanical and other toys, etc.

The Do-It-All Tractors Corporation, New York, has been

incorporated with a capital of $100,000 by R. M. Frink, G. H. Scanlon and H. Jensen, 935 Lafayette Avenue, Brooklyn, to manufacture farm tractors and parts.

The Angnex-Manhattan Tire Corporation, New York, has been incorporated with a capital of $75,000 by E. Antkes, W. Reaney and R. A. Wicksel, 15 East Fortieth Street, to manufacture automobile tires.

The Lord Dry Dock Corporation, 105 West Fortieth Street, New York, affiliated with the Lord Construction Co., same address, has construction under way on its new drydocks at Woodcliffe, North Bergen, N. J. A number of buildings will also be erected, including machine shops, metal-working plant, woodworking shops and other structures. It is estimated to cost close to $5,000,000.

The Central Roofing & Skylight Works, Inc., New York, has been incorporated by I. Deitelbaum, 163 West 170th Street, and associates, to manufacture roofing, metal skylights, and other sheet metal products, with capital of $100,000.

The Van Dorn Steel Products Co., 30 Church Street, New York, has leased the new brick factory on Williams Street, near Freman Avenue, Long Island City, for a local plant. It adjoints the plot of about 10,000 sq. ft. recently acquired by the company and upon which a new factory will be constructed later.

The George Dose Engineering Co., 43 West Twenty-seventh Street, New York, has secured a loan of $160,000 on its property at 527-33 West Fifty-fifth Street, preparatory to the erection of new works for automobile and machine service.

The Maintenance Co., Inc., 417 Canal Street, New York, manufacturer of electrical equipment, has acquired the six-story building at 449-53 West Forty-second Street, 60 x 100 ft., for new works. The present plant will be removed to this location.

The Bethlehem Shipbuilding Corporation, Front Street, Elizabeth, N. J., has plans under way for a number of additions to its shipbuilding plant, comprising the former works of Samuel L. Moore & Sons Corporation, to cost in excess of $800,000. It is said that construction will begin early in the summer.

The Biltwell Accessories Co., 401 East Twenty-third Street, New York, manufacturer of metal products, has leased the six-story building at 328-32 East Twenty-third Street for a new plant.

The A. C. Chesley Co., 277 Rider Avenue, New York, manufacturer of metal doors, windows, etc., has acquired property, 50 x 105 ft., on East 132d Street, near Cypress Avenue. The site adjoins the new factory now being erected and will be used for future extensions.

The Whitall-Tatum Co., 46 Barclay Street, New York, manufacturer of rubber goods, etc., is removing its hard rubber manufacturing works to its plant on Beers Street, Keyport, N. J., where a three-story addition was recently completed. The company has a tract of 13 acres of land to provide for future enlargements. Ground will soon be broken for the erection of a two-story and basement experimental machine shop at the South Millville, N. J., plant, 35 x 106 ft., and estimated to cost about $35,000.

The United Metal Supply Co., 322 Seventh Avenue, Newark, has filed notice of organization to manufacture dies, sheet metal products, etc. F. W. Laning, 322 Seventh Avenue, heads the company.

The Holley Mfg. Co., 285 Passaic Avenue, Newark, has been incorporated with a capital of $50,000 by Everett D. Holley, Arlington; Elmer E. Holley, Walter A. Mayer and Robert Parry, Newark.

The Lionel Corporation, 605 South Twenty-first Street, Irvington, N. J., manufacturer of electrically operated toys, batteries, etc., has had plans prepared for a one-story addition, 30 x 60 ft.

The Gypsy Sprayer Mfg. Co., Newark, has been organized by John A. Reinhard, Jr., and Harry Unger, 790 Broad Street, to manufacture liquid sprayers and spraying equipment, valves, etc.

The Interstate Sheet Metal Co., 511 Mulberry Street, Newark, has been incorporated with a capital of $100,000 by Daniel Joseph, Leo Silverberg and Fred Langbine, 123 Fabyan Place, to manufacture metal products.

The Hangall Wardrobe & Wire Works, 142 Canal Street, Newark, has filed notice of organization to manufacture wire hangers. Walter G. Goldsmith, 74 Johnson Avenue, heads the company.

Fire, Jan. 27, destroyed a portion of the plant of the Cutlery Corporation of America, 245-47 New Jersey Railroad Avenue, with considerable loss in equipment.

The Hart-Lawrence Co., Newark, has been incorporated with a capital of $100,000 by Raymond S. Hart, Arthur G. Lawrence, East Orange, N. J.; and J. Maxwell Coote, Elizabeth, N. J., to manufacture machinery and parts.

The National Supply & Service Co., Newark, has been incorporated with a capital of $50,000 by Roscoe P. Conkling, Clayton Richardson, and Arthur H. Wolfe, 156 Market Street, to manufacture hardware and other metal products.

The Air Container Co., Jersey City, N. J., has been incorporated with a capital of $250,000 by Arthur G. Fitzgerald, T. M. Cane and George G. Tennant, 15 Exchange Place, to manufacture mechanical tubing.

The International Automobile Accessory Co., Jersey City, N. J., has been incorporated with a capital of $150,000 by Albert J. Elliott, Frederick B. Bard and A. V. Blois, Jersey City, to manufacture automobile accessories and equipment.

Charles B. Elmore, American representative of J. Horstmann, machine tools, steel and small tools, 47 West Forty-second Street, New York, is desirous of securing information about machinery specially designed for making steel butt hinges, preferably a single or special purpose machine rather than machines for separate operations.

New England

BOSTON, Feb. 7.

A slight improvement is noted in the local machine tool market. Dealers are receiving a few more inquiries and sales of parts and attachments, as well as small tools, show an increase. The most important inquiry out is that of the Noyes-Buick Co., Boston, which involves a fairly large list of production equipment for manufacturing a recently developed universal joint. It has not yet been definitely decided whether to use a part of the company's plant on Commonwealth Avenue, or to purchase or build a new one. The Eastern Massachusetts Street Railway Co. has issued a machine shop list, covering about a half dozen tools, and the Badger Fire Extinguisher Co., Boston, is in the market for presses. Otherwise, inquiries are limited to one or two machines, but are fairly numerous, coming from a wide range of manufacturers and involving a variety of tools. Cotton and woolen mills are showing more interest in machine shop equipment than in several months, but other large industries continue to adhere to a non-buying policy. The largest purchase reported the past week is by the Worcester Gear Co., Worcester, Mass., whose plant was recently burned. It included a gear hobber, gap lathe, small engine lathes, milling machine and an upright drill. The Haywood Brothers & Wakefield Co., Wakefield, Mass., bought tapping machine equipment.

In isolated cases extended credit has been given purchasers of tools, but manufacturers generally are holding strongly to prices and regular terms. Prices on certain machines, withdrawn the past year or so, are beginning to make their appearance in dealer's lists. New England machine tool plants continue to operate on reduced schedule and in a number of instances cuts have been made in wages. Many manufacturers are devoting much time and effort to research work, and several are making machine parts, but are not assembling.

Business in used tools which was the conspicuous feature last week, continues satisfactory, but is not as good as heretofore. Dealers are still disposed to cut prices rather than pass up a prospect.

Fire recently did approximately $20,000 damage at the plant of the Tait & Marston Machine Co., 1230 Dorchester Avenue, Boston.

The Meriden, Conn., branch of the Waterbury Clock Co., has been discontinued and the machinery is being moved to the main plant in Waterbury. It was opened during the war and previous to closing was operated on a 50-hr. schedule per week.

The Northern Trailer Co., South Orrington, Me., capitalized for $100,000, is about to begin the manufacture of automobile trailers, sleds, snow plows, etc., in a local plant. Henry A. Chapman is president. It is a subsidiary of the Bangor Motor Co., Bangor, Me.

The Tide Water Oil Co., Bostwick Avenue, Bridgeport, Conn., will build a new one-story power house and pumping plant at its local works.

Fire, Jan. 20, destroyed a portion of the plant of the Turner Tanning Machine Co., 526-36 Main Street, Peabody, Mass., manufacturer of leather-working machinery, with loss reported at about $25,000.

The American Industrial Furnace Corporation, Boston, has been incorporated with a capital of $90,000 by Alfred

Cast, Malden, Mass.; Kristian A. Juthe, Newton, Mass.; and John R. Hammer, Winthrop, Mass., to manufacture industrial furnaces.

The Water Department, Hartford, Conn., has plans under way for a new hydroelectric power plant to furnish service for the filtration works at West Hartford, estimated to cost about $100,000. Bids for erection and equipment will be asked in March. New sand-washing apparatus, filter equipment, etc., will also be installed at the filtration works.

The R. P. Power Co., Albany Street, Worcester, Mass., is planning to rebuild its foundry, destroyed by fire Jan. 19, with loss estimated at $50,000.

The Union Iron & Metal Co., Bridgeport, Conn., has been incorporated with a capital of $50,000 by Harry Danberg, A. Rachelson and Samuel Carp, 106 Poplar Street, to manufacture iron, steel and other metal products.

The Hadley Scale Co., Northampton, Mass., has been incorporated with a capital of $150,000 by Harlan A. Hadley, Harry C. Humphrey and James E. McCullough, Northampton, to manufacture scales and other precision equipment.

Philadelphia

PHILADELPHIA, Feb. 7.

The Pennsylvania Wire Glass Co., Pennsylvania Building, Philadelphia, Pa., operating a plant at Dunbar, Pa., is completing plans for its new plant at Lewistown, Pa., 175 x 600 ft., one-story, and estimated to cost close to $100,000.

The Atlantic Refining Co., 3144 Passyunk Avenue, Philadelphia, operating a local oil refinery, as well as plants at Franklin and Pittsburgh, Pa., and Brunswick, Ga., has arranged for a bond issue of $15,000,000. It has filed plans for a new building at its local works, 14 x 40 ft., with rear, 24 x 97 ft.

The Automatic Aluminum Heel Co., Philadelphia, has leased property at 55 North Sixth Street for new works.

George F. Pettinos, Real Estate Trust Building, Philadelphia, foundry equipment and supplies, has filed plans for a new two-story building, 33 x 39 ft., at American Street and Susquehanna Avenue, for extensions.

The Atlantic City Tire & Rubber Co., 206 Humphreys Building, Atlantic City, N. J., has been incorporated under Delaware laws to manufacture automobile tires and other rubber products. A new two-story plant, 60 x 120 ft., to cost about $80,000, will be constructed at Virginia and Mediterranean avenues. A. L. Pearce is president.

The Delaware River Quarry & Construction Co., 21 Bridge Street, Lambertville, N. J., has tentative plans under way for a new quarrying and rock crushing plant near Glen Moore, N. J., to cost about $100,000 with equipment. A power house will also be constructed. R. A. Montgomery is president.

The General Electric Co., Schenectady, N. Y., has acquired the plant of the Independent Lamp & Wire Co., Inc., York, Pa., manufacturer of wire products.

W. W. Hepburn, Pennsylvania Building, Philadelphia, is at the head of a project to construct a new hydroelectric power plant at Schuyler, Va., to cost about $60,000. Plans are being prepared by Francis R. Weller, engineer, Hibbs Building, Washington.

The Allentown Portland Cement Co., Allentown, Pa., will make repairs and improvements at its large mill at Evansville, Pa., and plans to place it in operation at an early date.

The Stewart Furnace Co., Sharon, Pa., has filed plans for rebuilding a two-story structure at its plant, recently damaged by fire, to be 37 x 74 ft., and estimated to cost about $25,000.

The American Mfg. Co., Reading, Pa., has been incorporated with a capital of $50,000 by Henry T. Shick and John A. Witman, Reading, and Robert B. Barker, West Collingswood, N. J., to manufacture brass, bronze and other metal products.

The Delaware, Lackawanna & Western Coal Co., Scranton, Pa., will build a three-story addition to its electric power plant at Hampton, 34 x 74 ft., to cost about $65,000. Bids are being asked. C. E. St. John is mechanical engineer.

The Nickel Fabricating Co., Philipsburg, Pa., has been incorporated with a capital of $200,000 to manufacture metal products. D. Ross Wynn, Philipsburg, is treasurer.

The Klauder-Weldon Dyeing Machine Co., Jenkintown, Pa., manufacturer of textile machinery, has awarded a contract to C. B. Keen, 1218 Chestnut Street, Philadelphia, for a two-story building, 44 x 500 ft.

The Cooper Heater Co., Carlisle, Pa., manufacturer of stoves, heaters, etc., has filed notice of dissolution under State laws.

The I. X. L. Shop, 44 North Sixth Street, Allentown, Pa., specializing in automobile repair work, is planning for the establishment of a new works in a three-story adjoining building. A site at the rear of the structure at 38-40 North Sixth Street has been acquired which will be used for the erection of a new electrical repair shop for automobiles. T. A. Freed is manager.

Henry C. Snowden, Jr., Inc., Media, Pa., has been incorporated with a capital of $50,000 to manufacture hardware products. Henry C. Snowden, Jr., is president, and Robert Fussell, treasurer.

The Lee Tire & Rubber Co., Conshohocken, Pa., is planning for enlargements in its works to bring the capacity up to about 4000 tires a day. The present equipment provides for an output of nearly 2000 tires.

The Gulf States

BIRMINGHAM, Feb. 7.

The Motor Parts Service Co., Orlando, Fla., recently organized, will purchase equipment for its proposed new plant for the manufacture of automobile parts and general repair work. A department of the new shop will be devoted to electrical equipment. D. C. McMullen, Tampa, Fla., is vice-president.

R. M. Burt, Hastings, Fla., is organizing a company to establish a plant at Palatka, Fla., to manufacture special farm implements and equipment.

T. L. Lasseter & Co., Cedar Bluff, Ala., are planning to rebuild their cotton ginning plant, recently destroyed by fire with loss reported at close to $100,000, including machinery.

The Superior Motor Works, Inc., Titusville, Fla., has been incorporated with a capital of $100,000 by Thomas G. Knight, J. Neff and R. B. Hawley, to manufacture automobile equipment and parts.

The Valley Gin Co., San Benito, Tex., is planning for extensions and improvements in its plant to cost about $25,000.

The City Council, Ballinger, Tex., has arranged for a bond issue of $60,000 for the establishment of a new municipal electric light and power plant.

Hoisting and conveying machinery and other mechanical equipment will be installed at the proposed new steel and reinforced-concrete warehouse to be constructed by the City Council, Jacksonville, Fla. An appropriation of $350,000 is being arranged for the structure.

The Estate of R. G. Holzer, 317 Burgundy Street, New Orleans, La., has acquired a local building for the establishment of a new foundry and machine works. A list of equipment to be installed has been prepared.

E. V. Bateman and Henry Bagley, Ballinger, Tex., are organizing a company to establish a local plant for the manufacture of talking machines, motors and parts.

The Serving Corporation, Dallas, Tex., has been incorporated with a capital of $50,000 by Lester and H. D. Levy, and John D. McCall, to manufacture machinery for domestic and hotel kitchen service, including serving apparatus, washing machines, etc.

The Nims Motor Co., Canadian, Tex., is planning to rebuild its service and machine works, recently destroyed by fire with loss estimated at about $75,000.

The Corsicana Ice Co., Corsicana, Tex., is planning for immediate enlargements in its plant to cost about $75,000, including new ice-making and refrigerating equipment.

Baltimore

BALTIMORE, Feb. 7.

The Greenmount Iron & Mfg. Co., 883 Greenmount Avenue, Baltimore, is having plans prepared for the construction of a new cupola at its plant, and other extensions and improvements.

The Queen City Brick & Tile Co., Evitts Creek, Cumberland, Md., will build an addition and install considerable new machinery. The work is estimated to cost about $150,000.

The Carroll County Board of Education, Court House, Westminster, Md., has completed plans for a new electric light and power plant at Hamstead for school building service.

The Curran-Baltimore Motor Radiator Co., 1702 Light Street, Baltimore, recently incorporated, is purchasing equipment for its proposed automobile radiator manufacturing plant. The installation will cost about $15,000. C. S. Edwards is president.

Fire, Jan. 29, destroyed the mill and machinery of the Blue Ridge Slate Co., Esmont, near Charlottesville, Va., with loss estimated at $80,000. The plant will be rebuilt.

The company has had extension plans in view, providing equipment and facilities for about 50 additional men.

The Norfolk & Western Railway, Norfolk, Va., has arranged an improvement program to cost about $18,000,000 and will include the following: Additional engine terminals, machine shop and power plant, designed to handle the largest Mallet locomotives, to cost about $1,000,000; new shop tools to cost about $600,000; electrification of piers Nos. 2 and 3 at Norfolk, with the installation of new automatic coal dumping equipment, to cost about $650,000, and coal trimming machinery to cost about $150,000. The remainder of the appropriation will be used for the purchase of rolling stock and other miscellaneous work. The company has a large force working at its storage yards at Hagerstown, Md., and it is reported that this site will be used for the erection of new car and locomotive shops, estimated to cost about $1,000,000.

The Roberson-Strader Co., Greensboro, N. C., is planning the erection of a new machine shop at its box factory, to replace the works recently destroyed by fire, with loss estimated at $30,000. The loss at the box plant was about $35,000 additional, including machinery.

In connection with the rebuilding of its plant, recently destroyed by fire, the Standard Handle Co., Macon, Ga., will erect a new one-story shop, 60 x 130 ft., with machinery to provide for a capacity of about 600 dozen handles per day. The work for the most part will be concentrated on handles for agricultural implements. W. A. Roush is president and secretary.

With $100,000 capital stock the Wizard Separator Co., 403 Vickers Building, Baltimore, has been incorporated to manufacture grinding, crushing and pulverizing machinery. John D. Fields, Robert B. Jones and Andrew J. Kriel are the incorporators.

The Durabilt Fly Screen & Mfg. Co., Hoffman and Spring streets, Baltimore, has been incorporated with $50,000 capital stock to manufacture screens, sash, metal window strips, etc. Plans are being made for the construction of a factory. The incorporators are Milton R. Lerch, George H. and Thomas Frankton, Charles E. Hopps and Frederick Huber.

Prices on three 36-in. gage locomotives are wanted by R. P. Johnson, Wytheville, Va.

The Red Ash Fuel Sales Corporation, Raven, Va., desires quotations on equipment for coal mining. A. W. Horton is secretary.

J. E. Bernard, 109 Church Street, Roanoke, Va., has plans for the construction of a one-story machine shop.

Pittsburgh

PITTSBURGH, Feb. 7.

Machine tools continue to sell fairly well from dealers' stocks, but sales neither individually, nor in the aggregate reach large proportions. Buyers, seemingly, are not convinced that the decline in prices has run its course and consequently are delaying purchases, or buying used tools, which are good enough to meet their immediate requirements. Lathe chucks have been moving fairly well. Nothing yet has developed in the inquiries of the Jones & Laughlin Steel Co., or the American Sheet & Tin Plate Co., and it is not thought that this business will be placed very soon. So far, the price reductions by machine tool manufacturers in New England and in the Middle West have not been met by those in the Cincinnati district. A meeting of the directors of the International Nickel Co. is scheduled for tomorrow in New York and it is expected some action will be taken on the requirements for its new plant to be built at Huntington, W. Va.

Inquiries for cranes are few and old business still is dormant. Builders have so few orders booked that reports are beginning to come out of the naming of some very attractive prices which would permit at least partial maintenance of plant activities and organizations. Several of the larger makers now are operating on part time. All want orders for early delivery and it is likely that any business which comes out in the near future will be placed at or near buyers' prices.

Machinery and tools at the plant of the Savage Arms Corporation, Sharon, Pa., were auctioned off last week, with buyers from New York, Chicago, Boston and other centers. Nearly 100 lathes, over 50 grinders, hammers up to 12,000 lb. and other equipment were disposed of.

The Commercial Shearing & Stamping Co., Youngstown, Ohio, is erecting a building, 81 x 600 ft. on a 14½ acre site which will be equipped with two overhead 20-ton electric cranes, three shears and a number of presses.

The Colonial Engineering Co., Bellevue, Pa., has been incorporated with a capital of $150,000 by Charles A. Kloman, Bellevue; A. C. Kloman, Pittsburgh; and W. R. Bishop, Latrobe, Pa., to manufacture iron and steel products.

The Mayer Aircraft Corporation, Bridgeville, Pa., is planning for the erection of a new one-story factory, 100 x 150 ft., to manufacture aeroplanes and parts. C. T. Mayer is president.

The Standard Sanitary Mfg. Co., Pittsburgh, manufacturer of sanitary ware, has acquired two tracts of land, 30,000 sq. ft. and 50,000 sq. ft., respectively, in the vicinity of its works as sites for the erection of an addition. The present buildings on the property will be demolished. The company recently increased its capital from $12,000,000 to $20,000,000.

Berkebile Brothers, Swank Building, Johnstown, Pa., are planning for the erection of a new machine shop to occupy a portion of the property on Osborn Street, 265 x 600 ft., recently purchased.

The Motor Body Co., Pittsburgh, is being organized by Benjamin Heller, A. E. Kholos and Harry M. Stein, 302 Curry Building, to manufacture automobile bodies. Application for a State charter will be made on Feb. 28.

The N. B. Swank Machinery Co., Johnstown, Pa., has been incorporated with a capital of $100,000 to manufacture machinery and parts. N. B. Swank is treasurer.

The Rust Engineering Co., 1901 Fifth Avenue, Pittsburgh, is preparing plans and specifications for a new refinery to be erected by the Leonard Oil Gas Co., Newark, Ohio, at that place. J. W. Leonard is president.

The Pennsylvania Mold & Iron Corporation, Pittsburgh, is being organized by William P. Dietz, George H. Lewis and James K. Fawcett, to manufacture iron, steel and other metal products. Application for a State charter will be made on Feb. 21. Sterrett & Acheson, 1927 Oliver Building, represent the company.

The Jackson & Grow Machinery Co., Morgantown, W. Va., has awarded a contract to the Cole Brothers Construction Co., Morgantown, for a one-story addition, 60 x 80 ft., to replace a structure recently destroyed by fire.

The Pocahontas Fuel Co., Itman, W. Va., is having plans prepared for a one-story machine shop. A new tipple will also be constructed at the property. I. T. Mann is president.

The Kenilworth Tile Co., Newell, W. Va., is considering rebuilding its plant, recently destroyed by fire, with loss estimated at about $30,000.

The Guyan Machine Shops, Logan, W. Va., is planning for the installation of several new machine tools and miscellaneous equipment.

The Charles C. Broskie Phonograph Co., Huntington, W. Va., has been incorporated with a capital of $500,000 by Charles C. Broskie, John B. Marshall and James A. Young, Huntington, to manufacture talking machines, motors and parts.

Cleveland

CLEVELAND, Feb. 7.

German machine tool manufacturers have appeared in the local market and underbid American manufacturers on an inquiry for punching and shearing machines, the Ohio Crane Co., Bucyrus, Ohio, taking four at a price reported to be considerably lower than that quoted by American manufacturers. This company, which issued the list late in the year, is expected to purchase the remainder of its machinery, amounting to about $150,000, this week. While the market is still very dull, there is a slightly better volume of inquiry for single machines. Makers of drilling machines report some demand in the East from locomotive and boiler shops, and find a favorable indication of better conditions in the fact that they are getting a number of rush orders for repair parts. No inquiry is coming from the automotive field. The Cleveland Clinic has placed an order for a milling machine, grinding machine, precision lathe and a few other tools for making special apparatus for its laboratory. The Detroit & Toledo Shore Line Railroad is inquiring for a driving wheel lathe.

While many sellers take the position that lower quotations will not stimulate business, keen competition is resulting in more evidences of price concessions when prospective orders are of any size. The only recent price change reported is a reduction of approximately 10 per cent by the Canton Foundry & Machine Co. on its line of alligator shears.

The Fairfield Paper Co., Baltimore, Ohio, has placed contract with the H. K. Ferguson Co., Cleveland, for a two-story factory, 90 x 800 ft., for the manufacture of paper and paper boxes. It will be of reinforced concrete, and involve an expenditure of about $150,000.

The Cleveland Abrasive Wheel Co., Cleveland, recently organized to manufacture a complete line of emery grinding wheels, has established a plant at 2629 East 25th Street, where it occupies 6000 sq. ft. of floor space. J. R. Wild, formerly with the Canada Hard Wheel Co., Hamilton, Ont.,

has been elected president: N. C. Yarion, vice-president, and H. S. Roberts, secretary. One of the directors is E. A. Noll, president National Tool Co., Cleveland.

The H. K. Ferguson Co., Cleveland, recently was awarded a contract for a factory building for the Allen & Ginter branch of the Liggett & Myers Tobacco Co., Richmond, Va., being the second unit of this plant to be erected by the Ferguson company. It will be five-stories, concrete and steel, 78 x 130 ft., and cost approximately $400,000. It is stated that as soon as this unit is completed another will be erected to replace present buildings. The company is also planning the erection of a power plant.

The Gilliam Mfg. Co., Canton, Ohio, has acquired an additional site on which it plans eventually to erect factory extensions.

The Trumbull Bronze Co., Warren, Ohio, has commenced operations in its new foundry. It is brick and steel, 40 x 120 ft., equipped with four melting furnaces, and will have a capacity of from six to eight tons of castings per day.

The Rex File Co., Newcomerstown, Ohio, is planning to issue $100,000 additional stock to make plant extensions.

The Zozonian Steel Burial Vault Co., Toledo, Ohio, has been incorporated with a capital stock of $100,000 and will erect a plant for the manufacture of steel burial vaults. L. O. Brown is president.

The Ohio Crane Co., Bucyrus, Ohio, which was recently organized to manufacture locomotive cranes, having taken over the line of the Toledo Bridge & Crane Co., Toledo, Ohio, has completed its organization by the election of Charles F. Michael, president; William F. Billingsley, vice-president, and general manager; Charles Gallinger, secretary; and A. G. Stoltz, treasurer. The company has placed contract with the Bellefontaine Bridge Co., Bellefontaine, Ohio, for its new plant, 120 x 340 ft.

Chicago

CHICAGO, Feb. 7.

Inquiries, principally for single machines, continue, but few orders are actually placed. The Pettibone Mulliken Co., Chicago, manufacturer of frogs and switches, and the General American Tank Car Corporation, are both contemplating the purchase of new equipment, but have not yet issued inquiries. The Chicago, Rock Island & Pacific again has revived inquiries for several tools, including a 36-in. x 36-in. x 12 ft. planer, a 2-in. double bolt cutter, a 36-in. drill press, a 36-in. engine lathe and a 600-lb. hammer. The purpose of the inquiry is understood to have been to ascertain whether reduced prices would be quoted, and does not necessarily indicate that the railroad will purchase the equipment. The labor situation on the railroads is known to have a direct bearing on machine tool buying. One of the large Western lines has prepared a good sized budget for this year, but is postponing action until the Railway Wage Board either authorizes or vetoes the proposed abrogation of national agreements. Present working conditions imposed upon the railroads during Government control, make economical operation in company shops impossible. With traffic diminished and revenues proportionately decreased, the carriers must watch their expenses very closely and unless permitted to introduce efficiency into their shops, it will be to their interest to contract out their work, rather than invest in new equipment for their own use.

Following the example of the Norton Co., the Landis Tool Co. has reduced prices on grinding machines about 15 per cent.

Building construction in Chicago showed another decrease in January. Permits were issued for 166 buildings, fronting 6215 ft. and costing $4,119,999 as against 328 permits, 11,934 ft. of frontage and a cost of $7,862,000 for the same month last year, and 171 permits involving 5862 ft. of frontage and a cost of $5,308,000 during December, 1920.

The Lindsay Light Co., 161 Grand Avenue, Chicago, manufacturer of gas mantles, has postponed the erection of a one-story and mezzanine-floor building, 250 x 450 ft., until next spring.

The Splitdorf Electrical Co., 2900 South Michigan Avenue, is receiving bids through Paul Gerhardt, 64 West Randolph Street, on a six-story plant, 120 x 300 ft., at Twenty-second Street near Fifth-fourth Avenue, Cicero, Ill., to cost $700,000.

The Harter Mfg. Co., manufacturer of electric light fixtures, 522 South Clinton Street, Chicago, has had plans prepared by William G. Carnegie, 189 W. Madison Street, for a one-story factory, 100 x 125 ft., at Lincoln and Fullerton streets, to cost $50,000.

The Sampson Mfg. Co., manufacturer of automobile accessories, 4244 West Lake Street, Chicago, has let contract for the reconstruction of a one-story factory, 40 x 125 ft., to cost $12,000. Work has begun.

Gust. Bloom, 7715 South Halsted Street, Chicago, has awarded contract for a one-story machine shop, 50 x 75 ft., at 9726-9730 South Halsted Street, to cost $10,000.

Arthur Harris & Co., 212-218 North Curtis Street, Chicago, copper and brass founders, have let contract for a one-stoy plant, 51 x 52 ft., 213-219 North May Street, to cost $6,000.

The Leonard Tractor Co., manufacturer of motor-driven tractors and parts, Gary, Ind., will soon call for bids for the second unit of its plant at Griffith, Ind., one-story, 100 x 250 ft., to cost $100,000.

The Casey-Hudson Co., manufacturer of screw machine products, has affiliated with the Amalgamated Metals Co., manufacturer of brass and bronze castings. The offices of the Amalgamated Metals Co. will be consolidated with the Casey-Hudson Co., at 361 East Ohio Street, Chicago, but the foundry will remain at its old location, 2554 West Fillmore Street. The management of the Amalgamated Metals Co. remains unchanged.

The Rockford Automatic Machine Co., 420 Napoleon Street, Rockford, Ill., has certified to the Secretary of State the dissolution of its corporation. William Nelson was president and L. G. Daniels, secretary.

The Turner Brass Works, Sycamore, Ill., has been sold by Charles C. Reckett to S. L. Maytag and W. F. Pagel. Mr. Maytag is the president of the Maytag Washing Machine Co., Newton, Iowa. The Sycamore works will manufacture electric motors for the washing machines.

The Monroe Foundry & Furnace Co., Monroe, Mich., has increased its capital stock from $50,000 to $100,000.

H. C. Kofoed, Yuma, Colo., is building an addition, 30 x 60 ft., to his machine shop to house a new cylinder grinding machine.

The Pacific Car & Foundry Co., East Sixtieth and East Glisan streets, Portland, Ore., contemplates the enlargement of its plant. Additions will also be made to the Seattle works.

The Western Fixture Mfg. Co., 3037 Elston Avenue, Chicago, has been incorporated with a capital of $100,000 by Edmund Kissling, Frank Glomski, and Thomas Lissy, to manufacture metal specialties.

The Central Foundry Co., Marshalltown, Iowa, has plans under way for the construction of its new one-story foundry at Albert Lea, Minn., 100 x 200 ft., estimated to cost about $50,000.

The Ocean Floating Safe Co., 4520 West Grand Boulevard, Chicago, has completed plans for a one and two-story addition, 132 x 185 ft., and will hold the work in temporary abeyance. H. K. Holsman, 175 West Jackson Boulevard, is architect.

The Linga Co., 214 South Sheridan Road, Waukegan, Ill., has been incorporated with a capital of $40,000 by Philip Sheridan, Herman F. Repkow and William Salmon, to manufacture machinery and parts. A machine shop for general service will also be operated.

The Hampton Brick & Tile Co., Hampton, Iowa, will take bids late in the spring for its proposed plant to cost about $250,000 with machinery. The main building will be one-story, steel, 40 x 200 ft. J. C. Powers is secretary.

The Astronomical Clock Mfg. Co., 1910 Wabansia Avenue, Chicago, has been incorporated with a capital of $150,000 by H. S. Rademacher, P. Zak, and A. E. Manheimer, to manufacture special clock mechanisms, and recording devices.

Buffalo

BUFFALO, Feb. 7.

Fire, Feb. 2, destroyed a portion of the aeroplane manufacturing plant of the Poll-Ells Corporation, 672 Clinton Street, Buffalo, with loss estimated in excess of $100,000. The greatest damage was done to the assembling works. The company was recently incorporated with a capital of $250,000.

The McDermott Steel Corporation, Buffalo, has been incorporated with a capital of $500,000 by T. J. McDermott, 123 Ryan Street, and D. M. Goldthorp, to manufacture steel and iron products.

The N. B. Falls Lubricating Co., Prudential Building, Buffalo, will build a two-story addition at 103 Manitoba Street.

The Dunlop Tire Co., River Road, Buffalo, has placed a $6,000,000 mortgage on its local plant with the Fidelity Trust Co. The works are now over 90 per cent completed, and it is planned to begin operations at an early date. The maximum capacity of the plant will be 12,500 tires per day. Parry D. Saylor is vice-president in charge.

The Eastman Kodak Co., Kodak Park, Rochester, N. Y., will dispose of certain of its plants, in accordance with the decree of Federal Judge John R. Hazel in the case against the

company under the Sherman anti-trust law. The works to be sold include the Premo factory, South Street, and the Century-Folmer & Schwing plant, Calodonia Avenue, both at Rochester, as well as the Aristo plant at Jamestown, N. Y. The property represents an investment of $3,786,000, and the sale will include machinery, patent rights, etc. The company has plans under way for a machine shop at its main works at Kodak Park, one story, 110 x 360 ft.

The Beaver Board Companies, Buffalo, manufacturers of roofing and gypsum products, have arranged for a note issue of $5,000,000 for proposed expansion and operations.

Detroit

DETROIT, Feb. 7.

The note of optimism in the local machine tool trade evident last week has not abated. Inquiries continue to gain slowly in number, although sales are still comparatively few. A tendency on the part of buyers to defer purchases is evident, and in some cases used equipment is taken for replacement purposes. It is felt that the gradual betterment of the automotive situation cannot help but have a definite effect upon the machine tool market and will be evident very soon.

The new plant unit for the Economy Baler Co., Ann Arbor, Mich., has been completed and work will start in the early spring on another unit.

The Star Machine & Tool Co., Jackson, Mich., will soon start work on the construction of a new shop to be equipped with about $20,000 worth of tools. This is said to be the forerunner of a large development program contemplated by the company.

The Monarch Stamping Co., Detroit, has been incorporated with a capital of $25,000 by Hugo Stange, Russell E. and Otto H. Anger, 385 Ferdinand Avenue, to manufacture metal stampings, machine parts, etc.

The Mack Avenue Automobile & Engineering Co., 2510 Mack Avenue, Detroit, manufacture of automobile parts, etc., is planning for the installation of new machine shop equipment.

The Hardened Steel Products Co., Detroit, has filed notice of reorganization with a capital of $50,000.

The Reed Foundry & Machine Co., Kalamazoo, Mich., is perfecting arrangements for the manufacture of a stationary type of kerosene engine, as well as models for use in the Reed tractor.

The Automotive Appliance Co., Benton Harbor, Mich., has been organized to manufacture appliances and devices for automobiles and automobile engines. Forrest Woodley, and Chester P. O'Hara, St. Joseph, Mich., head the company.

The Belle Island Boat & Engine Co., 2096 East Jefferson Avenue, Detroit, is planning the erection of a new one-story factory on East Jefferson Avenue, brick and reinforced concrete, 90 x 150 ft.

The Atlas Tractor Co., Adrian, Mich., has commenced the erection of its new plant comprising about 15,000 sq. ft. of space.

Milwaukee

MILWAUKEE, Feb. 7.

Renewed interest by Eastern buyers form an encouraging development in the local machine tool market. Inquiry is increasing, while new business is being booked at a more satisfactory rate, although volume is still lacking. Manufacturers of textile and leather working machinery are slowly returning to the market and the automotive industries are doing some limited buying. Orders consist mostly of single tool requirements to piece out equipment or make replacements. Local machine tool manufacturers continue to maintain a fair production schedule.

The Badger Wire & Iron Works Co., Twenty-fifth and Cleveland avenues, Milwaukee, has increased its capital stock from $40,000 to $125,000 to cover recent extensions.

The Baraboo Mfg. Co., Baraboo, Wis., is completing the installation of machine tools and other equipment in its new plant, and is beginning regular production of small automatic refrigerating units for domestic uses. The organization of the company has been perfected by the election of the following officers: President, George Isenburg; vice-president, L. S. Wright, Milwaukee; secretary, George W. Andrews; treasurer, William Ott.

C. F. Finnegan, Granton, Wis., has plans for a one-story brick and concrete machine and repair shop, 50 x 80 ft., estimated to cost about $14,000 with equipment. The work is in charge of Gustave Krasin & Bros., Marshfield, Wis.

The Board of Education, Fond du Lac, Wis., is asking sealed bids until March 15 for the construction of a new high school building designed by Childs & Smith, architects, Chicago, and estimated to cost $500,000. It will contain manual training shops. Plans will be ready for bidders on Feb. 15.

The Prairie du Chien Tool Co., Prairie du Chien, Wis., will issue $40,000 of preferred stock to provide more adequate working funds and finance the purchase of additional equipment, materials, etc. It manufactures tool grinders. Charles Grelle is president, and J. J. Wangard, works manager.

The Farmers Barn Equipment Co., Stevens Point, Wis., which moved its works from Two Rivers, Wis., to Stevens Point about nine months ago, has increased its capital stock from $75,000 to $125,000. It intends to take additional space and later will add some equipment. Louis H. Sell is president and general manager.

Juul & Peterson, Oshkosh, Wis., have leased the building at 83-85 High Street and converted it into a gray iron foundry to specialize in small castings and light work on a jobbing basis.

The Badger Lumber & Mfg. Co., Oshkosh, Wis., will award contracts Feb. 15 for a two-story brick and concrete addition, 60 x 75 ft., for manufacturing household furniture novelties and other products.

The Board of Education, Two Rivers, Wis., is taking bids until March 7 for the erection of a new high school, with separate boiler house and power plant, including manual training shops. The estimated cost is $450,000. The architect is John D. Chubb, Chicago.

The Wrought Washer Mfg. Co., 46 South Bay Street, Milwaukee, has engaged Klug & Smith, designing and contracting engineers, Mack Block, to prepare plans for a brick and concrete shop and storage warehouse addition, to cost about $25,000. Bids will be taken April 1. Fred Doepke is president.

The American Rotary Engine Co., Wisconsin Rapids, Wis., which has been manufacturing a limited quantity of rotary pumping units for the past year, has decided to postpone erecting a new foundry and machine shop because of excessive costs and will continue to occupy the present leased quarters. A. R. Boyer, Chicago, is president.

The Bickett Rubber Products Corporation, Watertown, Wis., has been incorporated with a capital stock of $100,000 preferred and 2000 shares of common stock without par value. The incorporators are L. W. Bickett, Max G. Kusel and E. L. Hoge, all of Watertown.

The J. Hamacheck & Sons Co., Two Rivers, Wis., has purchased the business of J. A. Rummele, Buick dealer in Manitowoc, Wis. The new owners have plans for a new garage and machine shop, 50 x 120 ft., part two stories, to be erected early in the spring at an estimated cost of $25,000.

The Central South

ST. LOUIS, Feb. 7.

John C. Dyott, Jefferson City, Mo., and associates, are planning for the construction of a new cement manufacturing plant on a local site.

The City Council, Fulton, Mo., is planning for extensions and improvements in the municipal electric light and power plant to cost about $50,000.

The Oklahoma Gas & Electric Co., Oklahoma City, Okla., has arranged for a bond issue of $6,000,000, the proceeds to be used in part for extensions to plants and system. J. J. O'Brien is vice-president.

The E. A. Martin Machinery Co., Joplin, Mo., has plans under way for the erection of a new one-story building, 50 x 100 ft., at Fifth and School streets, to cost about $35,000. E. A. Martin is president.

A new one-story automobile service and machine works, 100 x 210 ft., to cost about $75,000 will be constructed by the Vesper-Buick Automobile Co., St. Louis. Preston J. Bradshaw, International Life Building, architect, is preparing plans and will soon ask for bids. F. W. Vesper is president.

The Dempster Steam Motor Co., Knoxville, Tenn., recently organized with a capital of $1,000,000, will operate a local plant for the manufacture of mine locomotives and other steam-driven equipment. George R. Dempster is head.

The Measurite Co., 522 Marion E. Taylor Building, Louisville, manufacturer of gasoline pumping and dispensing equipment, has plans under way for a new factory.

The St. Louis Wire & Iron Co., St. Louis, T. A. Tiesler, president, will equip a two-story factory addition, 80 x 150 ft.

The Ahrens Ice & Fuel Co., Pine Bluff, Ark., C. H. Ahrens and others interested, is in the market for ice making and cold storage plant equipment.

The Automatic Self-Leveling Clock Co., Kirkville, Mo.,

has been incorporated with a capital of $350,000 by J. A. Fixer, J. T. Dodson and C. W. Custer, to manufacture special clock mechanisms.

The Marianna Motor Car Co., Marianna, Ark., is considering rebuilding its service and machine plant, recently destroyed by fire with loss reported at $140,000, including machinery.

The Missouri, Kansas & Texas Railway, St. Louis, is having plans drawn for the proposed extensions and improvements to its car and locomotive shops at Wichita Falls, Tex., to cost about $300,000, including equipment. F. H. Ringer is chief engineer.

P. C. Allen, Nashville, Ark., and associates, are forming a company with capital of $1,000,000 to build a new cement manufacturing plant on a local site. Preliminary plans are under way.

Cincinnati

CINCINNATI, Feb. 7.

Engine lathes appear to be in better demand than other tools, and a number of inquiries, interspersed with a few orders, are being received, some of the business coming from the Southwestern section of the country. There is scattered buying of tools, one manufacturer having received an order for a shaper from Honolulu, and another an inquiry from Finland. Makers of wood-working machinery are still running full, and a number of other shops where orders had accumulated during the strike of last year, are still working full time, though in some cases with reduced forces. Some plants have shut down after manufacturing sufficient stock to take care of orders expected to mature shortly. Prices continue to be maintained in this district, although one central Ohio manufacturer of shapers has reduced quotations approximately 18 per cent to meet the cut announced by an Eastern manufacturer several weeks ago.

The Superior Spring Co., Springfield, Ohio, has been incorporated with a capitalization of $25,000 by B. F. Downey, H. E. Garss, J. H. Sullivan, L. O. Bohm and H. Haga, to manufacture automobile springs.

Indiana

INDIANAPOLIS, Feb. 7.

The Stevenson Gear & Mfg. Co., 924 Daly Street, Indianapolis, manufacturer of automobile gears and equipment, has acquired the three-story building at Cornell and Eleventh streets, formerly occupied by the Napco Corporation. The plant will be remodeled and equipment installed for a branch works. It is proposed to commence production in April. W. T. Stevenson is president.

The National Lamp Works of the General Electric Co., Nela Park, Cleveland, has awarded contract to Hughes & Collins, Indianapolis, for the construction of its new Indianapolis works, two-stories, 80 x 200 ft., estimated to cost about $200,000 with machinery.

The Visible Pump Co., New Haven, Ind., manufacturer of gasoline pumping equipment, will call for bids early in the spring for its new plant. A. Z. Polhamus, 402 Central Building, is president and general manager.

The Edward Valve & Mfg. Co., East Chicago, Ind., has preliminary plans under way for rebuilding the portion of its plant on Fourteenth Street, recently destroyed by fire. The work is estimated to cost about $40,000. P. H. Mars is general manager.

The Duesenberg Automobile & Motors Co., 515 Lemcke Building, Indianapolis, has filed plans for its new one-story factory, 90 x 500 ft., at 1511-25 West Washington Street, for the manufacture of high-speed motors, to cost about $80,000.

The United Stokers Co., Inc., Hammond, Ind., has been incorporated with a capital of $25,000 by C. N. and Felix Nau, W. A. Hill and E. L. Brown, Jr., Hammond, to manufacture automatic stokers.

The Chicago, Indianapolis & Louisville Railway, will commence the immediate erection of its new car shop at Lafayette, Ind., to be equipped primarily for the repair of steel freight cars. It is estimated to cost about $200,000.

The Etna Screw Corporation, Jackson, Mich., has established a branch at South Bend, Ind., where it will manufacture screws, nuts, bolts and special parts.

California

LOS ANGELES, Feb. 1.

The Los Angeles Gas & Electric Co., 645 South Hill Street, Los Angeles, is having plans prepared for an addition to its compressor building at 825 Jackson Street, to cost about $30,000. The installation will be in charge of the engineering department.

The Finn Brothers Pipe & Steel Works, 1308-16 North Spring Street, Los Angeles, has filed notice of organization to manufacture iron and steel products. It is headed by Thomas P. Finn and M. J. Richard.

The Bureau of Yards and Docks, Navy Department, San Francisco, is completing plans for a new plate and structural shape shop at the Mare Island Navy Yard. Bids for the foundation will be taken at once. It has also arranged for a new local scrap metal yard to cost about $27,800 with handling equipment.

Henry Rosenfeld, 907 Rialto Building, San Francisco, has had plans prepared for a new one-story, brick machine shop on Pine Street, to cost about $12,000. Macdonald & Kahn, Rialto Building, are engineers.

The Pacific Clay Products Co., American Bank Building, Los Angeles, has preliminary plans under way for a new plant to manufacture firebrick and other refractories on a site adjoining its works at Los Nietos, Cal. The initial unit will have a capacity of about 25,000 bricks per day, and the second unit, to be erected later, will increase the output to 40,000.

The Southern California Edison Co., Los Angeles, has arranged for a bond issue of $5,000,000, the proceeds to be used in connection with power development and new hydroelectric power plant construction.

About $500,000 will be expended by the Atchison, Topeka & Sante Fe Railroad, Los Angeles, for a new icing and ice-manufacturing plant at Hobart Station, Vernon, Cal. The main building will be one-story, reinforced-concrete, 85 x 275 ft. The icing dock, provided with mechanical conveyor system, will be 500 ft. long.

George Heck, San Diego, Cal., and associates are organizing a company for the establishment of a brick manufacturing plant. A site has been selected and machinery will be ordered at an early date.

F. D. Brainerd, 1376 North Western Avenue, Los Angeles, has filed plans for a new one-story machine and repair shop at 1369 North Western Avenue.

Canada

TORONTO, Feb. 7.

Although the Canadian machine tool market has not yet reached normal, conditions are gradually showing improvement. Sales, however, are limited, but inquiries are coming through in larger numbers, many of which will probably result in orders. The price question is not so much a factor as a few weeks ago, both dealers and users of equipment now being of the opinion that further reductions will not be made for some months. A number of industries which have been closed for three or four weeks are now increasing their operations and looking around for a few tools. While the demand for new machinery is much brighter, dealers in used equipment report some good sales.

The Blashill Wire Machinery Co., Montreal, is looking for a local site to establish a plant for making wire fencing. A. E. Blashill is the designer of a new type of fence making machine and the company has been contemplating establishing a plant for the past two years, but owing to the difficulty in securing raw materials plans were temporarily abandoned.

The Spruce Falls Co., 9 College Street, Toronto, is in the market for second-hand sash and door machinery.

Walker H. H. Savage, liquidator, is offering for sale the plant of the Williams Mfg. Co., Ltd. (in liquidation) 1789 St. James Street and 465 Bourget Street, Montreal. It is now in operation, and comprises the following buildings: Machine shop, five-stories, concrete, 50 x 100 ft.; machine shop, four-stories, brick, 40 x 187 ft.; wood-working shop, two-stories, brick, 50 x 78 ft.; gray iron foundry, 70 x 176 ft., and office building; also complete machine tool equipment including electric motors, transmission and shafting, either with the plant or separately.

The Royal East Duke Oil Co., 171 St. James Street, Montreal, will build a refinery.

Eckensweil & Harkley, Walkerton, Ont., have leased a factory building which will be remodeled and equipped for manufacturing cement tile.

The London & Port Stanley Railway, London, Ont., will purchase a steam shovel and a new electric locomotive. J. Richards is manager.

Bids will be called at an early date for an auxiliary steam plant to cost $300,000 for the Ottawa & Hull Power Co., Ltd., Hull, Que. Russel Blackburn, Wellington Street, Ottawa, Ont., is superintendent.

The Board of Water Commissioners, Port Hope, Ont., R. Gray, secretary, is receiving bids for a motor-driven turbine pump and accessories.

BOOK REVIEWS

Chemistry and Civilization. By Allerton S. Cushman, A.M., Ph.D. Pages, 150, 6 x 8½ in. Published by Richard G. Badger, 194 Boylston Street, Boston 17, Mass.

The book is best adapted for a person who has a smattering knowledge of chemistry, being too technical, perhaps, for the person totally ignorant on the subject and too elementary to be used as a textbook, handbook or reference. It should be read by the chemical specialist along one line in order to get a birdseye view of the entire chemical field and to find the relation of his line to the entire science. The author is director of the Institute of Industrial Research, Inc., Washington, D. C. He says: "The effort has been made to produce at least a readable story of chemistry, that may hope to interest even those who have not heretofore given attention to the subject as it affects their own lives. Perhaps the best excuse for the present volume lies in the fact that other writers have not been at so much pains to link up the present and future of this branch of science with its historical past."

The metallurgy of the making of iron and steel and the by-products of coke is duly treated. The book is up-to-date in that it not only considers the chemistry of the war but deals in the science of the present, particularly the efforts to secure synthetic nitrate products for fertilizer, the live problem of to-day. The book is idealistic and dresses its subject matter in eloquence and beauty of expression. The author has a happy method of clarifying his descriptions by comparing the unfamiliar with something well known, as when he compares the workings and relations of the electrons, atoms and molecules to the moon, earth, sun and other planets. The book contains photographs of former famous chemists, tables and diagrams.

How to Keep Invention Records, together with an explanation of the nature of industrial property. By Harry A. Toulmin, Jr., J.D., Litt.D. Pages, xii + 85, 5¼ x 8¼ in. Published by Appleton & Co., New York.

Every inventor and manufacturer can use this little book to advantage. Brief but very complete, free from technical language, it gives the information anyone interested in patents should have. It is written to give the best means of avoiding patent litigation, or, if this is impossible, to minimize it. The work of an expert in the patent litigation field, it very properly does not encourage the inventor to be his own attorney. The necessity of careful and thorough work is emphasized.

The first chapter treats of the nature of the monopolistic property created by Government grant. Mechanical, process, chemical and design patents and their fields are described. Trademark and literature copyright is covered. Foreign protection is outlined for both patent and copyright.

Chapter II consists of a series of sample record forms which are fully described, paragraph by paragraph, following the patent from inception to infringement. These in practice would often require modification to cover the particular case but show what is needed. Chapter III covers patent investigations, details field and methods briefly, in relation to exploration, in making ready for infringement suit, and in self protection before purchasing patents. If the outline is followed out the patent attorney would be able better to safeguard his client and increase the value of the patent. J. J. R.

Merchandising Studies of the States, their resources and development. By Archer Wall Douglas. Pages, v + 178, 5¼ x 7½ in. Published by Ronald Press, 20 Vesey Street, New York.

A study of a series of states typifying the several main sections of the United States, taking into account their material resources, climate, present condition and particularly that driving force inherent in and individual to that particular state which has brought it to its present development and which promises great things for it.

Mr. Douglas has not touched the oldest section of the country (roughly the North and Central Atlantic states), feeling they had arrived at a settled character some time ago, although likely to be remodeled by the newer type of immigration, while the Southern and Western sections are only now rounding out their characters.

The introduction emphasizes the need, the method and the spirit in gathering such knowledge of the country as a part of "Forehandedness" and "Vision" in detecting "Opportunity" in investment and merchandising. Arkansas, Kansas, North Carolina, Wisconsin, Ohio, Texas, Colorado and California are described as typical of their sections. The treatment is accurate, appreciative and sympathetic. This country of ours is exceedingly large, difficult to grasp mentally as a whole and is progressing rapidly. Reading this book will bring this home to most of us. J. J. R.

Straight Business in South America. By James H. Collins. Pages xi + 305, 5¼ x 8¼ in. Published by D. Appleton & Co., New York.

"Most of our literature on South America is either rigidly practical or exuberantly optimistic. Official bulletins and technical works tell the business man how to sell goods on the Southern continent, but overlook other aspects of trade, such as buying, investments and the development of South American resources. Books of travel and diplomatic propaganda exhibit our Southern neighbors to the best possible advantage, but ignore hard facts with which the business man must deal, and which usually astonish him when he visits the Southern continent."

It has been Mr. Collins's task to cover as many as possible of the points about which so little is known and he has done so in a vigorous, interesting style, each chapter replete with anecdotes and examples that tell the story of mistakes and successes of American business in these markets. There is a clear view of general conditions, customs, trade, banking, shipping and advertising facilities, concluding with a brief outline of the history of the South American countries.

The book is written from the viewpoint of the American manufacturer or exporter wishing to enter Latin-American markets with his product. For the seller of iron and steel there is slightly less valuable information than for the seller of general merchandise. The chapters dealing with the general conditions the salesman encounters, however, and chapter IV., V., VI. and VII., "The Tools of the Trade"—our own banks; our own ships; investments and distribution contain valuable information for any company dealing with these markets, regardless of its product.

Mr. Collins has evidently avoided as far as possible the inclusion of statistics, but on page 189, in dwelling upon our large imports from these markets, he apparently falls into error on our imports of metals, stating that the United States imports 100 per cent of its tin from South America instead of 100 per cent tin ore. During the first ten months of 1920 our importations of tin from the Straits Settlements alone were 65,000,000 lb.

The South American farmer is strongly contrasted with the American farmer, Mr. Collins bringing out the vast difference in the living conditions, intelligence and buying power of the two, and the difficulties that the seller of agricultural implements, trucks, automobiles and other modern labor and time-saving devices encounters.

In dealing with the necessity of buying as well as selling there is a tribute to the ability of Samuel Vauclain of the Baldwin Locomotive Works and his recent transactions in the Near East where he exchanged locomotives for petroleum, grain and other materials.

Concluding his work with a brief outline of famous names in South American history and a glance at the work of the United States in the Canal Zone and its effect on the Latin-American attitude, Mr. Collins seems to have answered, if not all, at least a good share of the questions that are certain to arise in the minds of the executives of a company preparing for South American trade and later in the minds of the salesmen sent to these markets.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Iron and Soft Steel Bars and Shapes*

Bars:	Per Lb.
Refined bars, base price	3.63c.
Swedish bars, base price	15.00c.
Soft steel bars, base price	3.48c. to 3.63c.
Hoops, base price	4.18c. to 4.58c.
Bands, base price	4.18c. to 4.33c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	3.58c. to 3.73c.
Channels, angles and tees under 3 in. x ¼ in., base	3.48c. to 3.63c.

*The low prices are those of the Carnegie Steel Co. and are subject to a cartage charge of 15c. per 100 lb. in the Metropolitan district and 10c. per 100 lb. to local points in New Jersey. A Brooklyn, N. Y., warehouse quotes 10c. per lb. higher price than the Carnegie Steel Co., but delivers free in the metropolitan district.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.65c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.85c.
Toe calk, ½ x ⅜ in. and larger	4.25c.
Cold-rolled strip, soft and quarter hard	10.00c. to 10.50c.
Open-hearth spring steel	4.70c. to 8.00c.
Shafting and Screw Stock:	
Rounds	5.50c.
Squares, flats and hex	6.00c.
Standard cast steel, base price	15.00c.
Best cast steel	20.00c.
Extra best cast steel	25.00c.

Tank Plates—Steel

¼ in. and heavier	3.78c. to 3.93c.

Sheets

Blue Annealed	Per Lb.
No. 10	4.68c. to 4.83c.
No. 12	4.73c. to 4.88c.
No. 14	4.93c.
No. 16	5.03c.

Box Annealed—Black

	Soft Steel C.R., One Pass Per Lb.	Wood's Refined, Per Lb.
Nos. 18 to 20	5.68c.	.....
Nos. 22 and 24	5.73c.	6.80c.
No. 26	5.78c.	6.90c.
No. 28	5.88c.	7.00c.
No. 30	6.13c.	.....

No. 28, 36 in. wide, 10c. higher.

Galvanized	Per Lb.
No. 14	6.00c. to 6.23c.
No. 16	6.25c. to 6.48c.
Nos. 18 and 20	6.40c. to 6.63c.
Nos. 22 and 24	6.55c. to 6.78c.
No. 26	6.70c. to 6.93c.
No. 27	6.85c. to 7.08c.
No. 28	7.00c. to 7.23c.
No. 30	7.50c. to 7.73c.

No. 28, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Blk.	Galv.	*Wrought Iron*	Blk.	Galv.
½ in. Butt...	—40	—23	¾-1½ in. Butt.	— 3	+17
¾-3 in. Butt.	—44	—28	2 in. Lap.....	+ 3	+21
3½-6 in. Lap.	—39	—24	2½-6 in. Lap...	+ 1	+17
7-12 in. Lap..	—32	—15	7-12 in. Lap....	+12	+30

Steel Wire

BASED PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	5.75c.
Annealed soft	5.75c.
Galvanized annealed	6.50c.
Coppered basic	6.25c.
Tinned soft Bessemer	7.25c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	22 c. to 22½c.
High brass wire	22¾c. to 23½c.
Brass rod	19¾c. to 22½c.
Brass tube	37¾c. to 39½c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 23c. to 24c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
			Primes	Wasters
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb.	$7.80	$7.55
		90 lb.	7.90	7.65
		100 lb.	8.00	7.75
IC	$12.00	$10.75	IC	8.15	7.90
IX	13.75	12.25	IX	9.15	8.90
IXX	15.25	13.75	IXX	10.15	9.90
IXXX	16.50	15.08	IXXX	11.15	10.90
IXXXX	18.00	16.25	IXXXX	12.15	11.90

Terne Plates

8-lb. Coating 14 x 20

100 lb.	$8.35
IC	8.50
IX	9.50
Fire door stock	11.50

Tin

Straits pig	36c.
Bar	41c. to 46c.

Copper

Lake ingot	16c.
Electrolytic	16c.
Casting	16c.

Spelter and Sheet Zinc

Western spelter	7¼c. to 7¾c.
Sheet zinc, No. 9 base, casks	13½c. open 14c.

Lead and Solder*

American pig lead	5¾c. to 6¾c.
Bar lead	6¾c. to 7½c.
Solder, ½ and ½ guaranteed	26c.
No. 1 solder	23½c.
Refined solder	19½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb	80c.
Commercial grade, per lb	40c.

Antimony

Asiatic	7½c. to 8½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	35c to 38c.

Old Metals

The market was firmer during the latter part of the week though values showed little change. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	10.50
Copper, heavy and wire	10.00
Copper, light and bottoms	8.00
Brass, heavy	6.75
Brass, light	5.00
Heavy machine composition	10.00
No. 1 yellow brass turnings	6.25
No. 1 red brass or composition turnings	8.00
Lead, heavy	4.00
Lead, tea	2.75
Zinc	3.00